

AN EXPLORATION OF MULTIMEDIA USE IN AN ONLINE RN-BSN PROGRAM

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To Scott, Jeanne, Jeff, and Megan (and in loving memory of Fred)

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An Exploration of Multimedia Use in an Online RN-BSN Program

The purpose of this qualitative action research study was to determine what multimedia non-traditional RN-BSN nursing students' used in the online classroom and in what ways they used it within the context of one problem-based and one project-based online course. Specifically, there was an interest in determining what aspects of multimedia were most useful to the nursing students' learning by examining the differences across these instructional designs from a more sociocultural perspective. As part of this examination, the researcher compared views of authenticity as articulated by the designer, original subject matter expert (SME), instructors, and students. The goal was to use this data to formulate specific guidelines to inform the types of multimedia for future production.

The participants were current online RN-BSN nursing students within a large Midwestern university and instructors who had taught at least one of the courses under study. To achieve the goal of this study, multiple data were gathered from three data types: (1) artifacts, (2) observational data, and (3) inquiry data. There were two parts to the study: artifact collection and interviews.

A total of 460 student artifacts were collected. Artifacts were analyzed using thematic analysis (Braun & Clark, 2006; Shank, 2002) until saturation was reached from one problem-based learning course and one project-based learning course with enrollments of 16 and 20 respectively. In addition, data were collected from six instructors and five students.

Results of this study revealed that instructors' perspectives differed not only with regard to student uses of multimedia across the two different pedagogical designs, but also with regard to the benefits and constraints to student's learning. Results suggested that students used

multimedia in varied ways within the different designs to support their learning. Students and instructors reported the most useful attribute of multimedia was how it helped establish relevance to the real world. This study showed that the way students, instructors, and the designer defined real world or authenticity may be influenced by external factors that need to be taken into consideration. This has implications for the decades of research published on multimedia guidelines. Multimedia guidelines for the program under study are provided.

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CHAPTER ONE: INTRODUCTION

Introduction

Online learning programs are being developed at increasing rates as higher education institutions explore ways to answer the rising costs of face-to-face campus education, to meet the demand from working professionals who want to further their education, and to increase access for students who are unable to attend traditional face-to-face campus programs. Smartphone technologies and improved technology infrastructures have enabled access to information to almost anyone, anywhere. Thus, today's students have a wide range of possible educational opportunities ranging from just-in-time videos (e.g., Khan Academy, 2012) to free online courses where students can earn digital certification (e.g., Massachusetts Institute of Technology, 2012) to fully developed and accredited university online degree and competency-based programs (Hanna, 2013).

As innovations for online learning continue to emerge, higher education institutions must continue to compete by creating online programs that attract and retain students.

Attraction and retention is especially important in the nursing field, which has a shortage of professionals (Finch, 2012). Research shows that the more educated the nurse, the better the patient outcomes (Kendall-Gallaher, Aiken, Sloane, & Cimiotti, 2011; Rosseter, 2014). The Institute of Medicine (IOM) (2010) released a landmark report on *the Future of Nursing* that called to prepare an 80-percent baccalaureate-prepared nursing workforce by 2020. The report stated, "...the demands of an evolving health care system and the changing needs of the patients, nurses must achieve higher levels of education, and this need could be met by increasing the percentage of nurses with a BSN" (IOM, 2010, p. 3). Whereas some believe that, "RN-BSN programs create a method for the relatively quick training of nurses to supply the need, but then

offer an avenue for those nurses to continue their education and improve outcomes” (K.Tredway, personal communication, July 24, 2014).

To reach these goals of preparing nurses for today’s workforce, nursing educators have called for curriculum innovation in regard to program design and pedagogical approaches for nurses (Benner, Sutphen, Leonard, & Day, 2009; Kaddoura, Williams, & Jabaley, 2012; National League for Nursing, 2003). Kaddoura et al. (2012) stated that, “it is widely noted in the literature that because of the complexity of today’s health care system and health care delivery, transformation of nursing education is necessary” (p. 15). Lombardi, Sutphen, and Day (2012) claim that the movement from the traditional nursing classroom to the online format is a move toward such transformation. The authors noted that in 2012 there were at least 100 online programs that offered BSNs. As this number grows, it becomes increasingly important for online nursing programs to examine items in the curriculum that nursing students find effective for their learning.

Student satisfaction is used as a quality measure for online nursing programs (Billings, Dickerson, Greenberd, Wo Yow-Wu, & Talley, 2012), as it is with online programs in general (Allen, Omori, Burrell, Mabry, & Timmerman, 2013). Studies have found nursing students’ satisfaction with online courses related to the flexibility (Ali, Hodson-Carlton, & Ryan, 2004; Lerner, Wilson, & Sitzman, 2007), quality of instruction, and the effectiveness of the instructor (DeBourgh, 2003).

In an effort to expand the understanding of quality factors in nursing online programs, Anderson, Tredway, and Calice (2015) explored the factors that impacted online nursing students’ perceptions of online course quality by conducting a factor analysis that examines response data from 339 course evaluations over 9 different online courses that ran for 10 terms from 2011-2012 at a large Midwestern university online nursing program. This program has

been recognized multiple times nationally as an outstanding online program (U.S. News, 2011, 2014; 2015) and the designs of the online courses are well received by administration (Anderson & Tredway, 2009). Specifically, by performing an image factoring extraction method with varimax rotation on the 35 Likert-type items in the course evaluation of all the courses, the following groupings of data were identified and named: (1) *instructional design*, (2) *course facilitation*, and (3) *infrastructure and technology*. This study called for further research on the items that make up the instructional design factor in order to learn more about the specific elements to which online nursing students' respond favorably in this particular online RN-BSN nursing program.

Problem Statement

One item that that was part of the instructional design factor in the Anderson et al. (2015) study was related to the use of multimedia in the courses. The participants in this study generally responded favorable to the use of multimedia in the 9 courses. Initial investment in the multimedia portions of this RN-BSN program was significant because there was an assumption made by administration that multimedia would make the courses more engaging. While the multimedia was purposefully designed to supplement and enhance the curriculum, and while results from a prior study by the researcher showed that students generally do respond favorably to multimedia in the courses (Anderson et al., 2015), it is not known which of the multimedia are accessed, how they are being used, nor the benefits and constraints that the multimedia offer the nursing students in the context of the online authentic activities and instructional methods.

In fact, the multimedia for the program was pre-designed by the researcher, who served as the instructional designer, and SME with a specific authenticity in mind for the culture of non-traditional nursing students and was embedded within different pedagogical designs in support of the learning activities. Nonetheless, even without understanding how the current multimedia is

used and received by the RN-BSN nursing students within the context of these learning environments and activities, there has been recent interest to focus on new multimedia development in the courses. Thus, given the resources it takes to create and maintain multimedia in online courses, additional analysis is needed before further investment is made.

The need to further this type of investigation is supported elsewhere in the literature where researchers look to further understand curriculum that will meet the needs of today's nursing students (Anderson & Tredway, 2009; Kaddoura et al., 2012). There have been claims of the promise of multimedia use in online nursing education (Jeffries, Aschenbrenner, Dreifuerst, Heensel, Keenan, & Vazzano, 2012) but the empirical evidence to support these claims is limited. The idea of promise may stem from the decades of research that have led to generic recommended modes of multimedia for education (e.g., Mayer & Anderson, 1991; Mayer & Sims, 1994; Sung & Mayer, 2012) and recent research has illustrated the promise of its use in online learning environments (Clark & Mayer, 2008, 2011).

However, instead of using the current multimedia guidelines for the online nursing program to build more multimedia, there is need to look at use of multimedia within the context of the educational culture and the instructional designs and activities in which they are used. With the current multimedia guidelines, there are some researchers that suggest that evidence-based research that supports multimedia learning has been conducted in controlled laboratory environments (De Jung, 2010; Rieber, 2005), in natural science domains (De Westelinck, Valcke, De Craene, & Kirschner, 2005), and the replication of these studies in the classroom has shown conflicting results (e.g., Austin, 2009; Clark & Feldon, 2005; De Westelinck et al., 2005; Dwyer & Dwyer, 2006). Moreover, some discussion focuses on the fact that the tasks studied were not authentic to the learners which was viewed as problematic (van Merriënboer & Ayres, 2005) and the methods for delivery were not well presented or discussed (Ballantyne, 2008).

Importantly, the guidelines for multimedia use are grounded in cognitive views of human processing (Ausubel, 1969; Gagne, 1985; Piaget, 1964).

Multimedia learning has consistently been discussed as building mental representations from words and pictures, whereas the multimedia is the presentation to form such representations via multiple sensory modalities (e.g., Mayer, 2005, 2014; Schnotz & Lowe, 2003). Cognitive theory of multimedia learning has been discussed for decades by Richard Mayer (e.g., 1999, 2005, & 2014) and others (e.g., Clark & Mayer, 2012; Moreno & Mayer, 1999; Plass, Chun, Mayer, & Leutner, 1998; Sweller, 2005a). Nonetheless, the current literature does not take into account how internal and external factors may shape how students and instructors report value and use of multimedia.

In fact, the research examining multimedia from a more sociocultural viewpoint is limited despite multimedia use being reported favorably by nursing students engaged in authentic problem-based and project learning environments and activities (Anderson & Tredway, 2009). As argued by Bonk and Cunningham (1998), “when concepts, strategies, and tools are abstracted from the theoretical viewpoint that spawned them, they are too often stripped of meaning and utility” (p. 25). This situated viewpoint has been supported elsewhere in the literature (Barab & Squire, 2004; Wang & Hannafin, 2005). Thus, this study attempts to build on more sociocultural perspectives of learning. Specifically, it examines multimedia use by students who are RN nurses going back to school to earn their bachelors of science in nursing degree (BSN) in light of the authentic learning environments and activities in which the multimedia is embedded. Furthermore, the researcher aims to add to the understanding of how external influences such as educational culture and views of authenticity, may impact not only designer and subject matter expert’s views, but also how instructors and students report what multimedia they desire in their learning experiences.

Other researchers have brought forth the variability between designers' intentions of what they believe to be authentic to the learners when developing instruction, compared to what the actual learners' believe to be authentic to them (e.g., Gulikers, Bastiaens, & Martens, 2005; Herrington, Oliver, & Reeves, 2003) and others have argued that authenticity cannot be predetermined (Petraglia, 1998b). Consequently, this study provided insight into the original views of authenticity as defined by the designer and the SME and how that compares to the authenticity reported by the students and instructors. This study aimed to assist online program decision makers on future multimedia investments and designers on the guidelines for multimedia design for this specific culture of nursing online education that tends to be comprised of non-traditional nursing students.

Description of Study

The purpose of this study was to investigate the specific multimedia that are accessed in two online nursing courses, how they are being used in the context of authentic learning environments and activities, and the benefits and constraints that multimedia offer non-traditional RN-BSN nursing students. This study explored the potential of multimedia to serve as a tool to mediate human dialogue and internalization with the nursing students within the authentic contexts with a particular interest in how the designer, subject-matter expert, instructors and students defined authenticity. The goal was to provide multimedia guidelines to the administration at a large Midwestern university that could be used for future multimedia development that would be specifically beneficial to the online non-traditional RN-BSN nursing students. The following research questions guided the inquiry:

- 1) What multimedia do online non-traditional nursing students use and in what ways to do they use it within the context of online authentic activities?

- a) How do multimedia artifacts from online problem-based and online project-based courses shape the way non-traditional nursing students define the field compared to other factors such as course readings in individual activities and in activities where knowledge is socially distributed?
 - b) What role does multimedia play to assist learning in individual activities and in activities where knowledge is socially distributed in online problem-based and online project-based learning courses?
- 2) What aspects of multimedia are most useful to online nursing students for supporting socially developed artifacts and for application to practice?
- a) What attributes of the multimedia do the designer, instructors, and students believe are most useful?
 - b) How is authenticity articulated by the designer, instructors, and students?

The two courses, *NURS 242 Concepts and Processes for Contemporary Nursing* and *NURS 385 Concepts and Processes in Population-Focused Nursing*, were selected because of their problem-based and project-based instructional designs. There were five activities selected from one section of NURS 242 from the Spring B 2014 term and three activities from Project 3 were selected from one section of NURS 385 from the Summer B 2014 term. The activities from these courses were selected because they were representative of different types of individual and team-based activities in the courses and aligned to the research questions. There were sixteen students enrolled in NURS 242 and twenty students enrolled in NURS 385.

Data collection included downloading student artifacts (e.g., discussion posts, reflection journals, projects, and final presentation submissions) from these activities. Analysis involved initial text queries, developing keywords directly from the student artifacts, and creating overarching themes from these keywords. The content was searched for references to the themes

to explore what type of multimedia and course readings were used and how they were being used. This analysis was performed to determine what multimedia was used by non-traditional nursing students and in what ways they used it within the context of the course activities.

Online interviews were conducted with six instructors and five students to triangulate the data. The researcher used these data to answer the research questions and to build suggested guidelines for multimedia development that was specific to the RN-BSN non-traditional nursing students.

Significance of Study

While there was direct benefit to the online programs under study, there were also broader research implications. The multimedia guidelines that are commonly discussed in the literature are from cognitive views of human processing (e.g., Clark & Mayer, 2012; Mayer, 1999, 2010; Moreno & Mayer, 1999, Plass, et al., 1998; Sweller, 2005a) and focus on how cognitive learning happens with multimedia without much of an examination of its influence on learning from a sociocultural perspective. There was potential with this research to expand beyond the cognitive focused aspects of multimedia learning theory by including perspectives that analyze multimedia through a sociocultural lens within the context of authentic learning environments and activities, and broader educational nursing culture in which it was embedded. There is support in the literature to extend our understanding of learning by examining it from multiple perspectives (Steiner, 1988) and the online classroom offers a dynamic environment to explore how actual nursing students engage with multimedia within authentic online learning activities across different instructional pedagogical designs and activities.

This study afforded the opportunity to examine the original intentions for the design of the multimedia and compare that with what the instructors and students of the program value and use. The results from this study may be used to offer further guidance to instructional designers

and instructors who are charged with designing and integrating multimedia for RN-BSN nursing students and may provide additional insight into the different perspectives on multimedia use and authenticity. In addition, having an understanding of what attributes of multimedia are most relevant to non-traditional nursing students, may provide similar RN-BSN online nursing program a starting point to explore what may be relevant to for their own online nursing programs.

Definition of Terms

The following section provides definitions to provide clarification for terms used in this study:

1. *Authentic learning environments* – learning environments that hold relevance or real-world applications for the learners (Jonassen, 1999) that focus on complex problem-solving, role-playing, and case exercises embedded in participation in online communities of practice (Lombardi, 2007) and are representative of the contexts encountered (Wiggins, 1993).
2. *Authentic activities* – those activities that result in application and integration of knowledge in real world tasks (Herrington & Oliver, 2000).
3. *Authenticity* - holding relevance or real-world applications for the learners (Jonassen, 1999).
4. *Culture of nursing education* – the shared norms, beliefs, and values that guide nurses educational practices, decisions, and thinking (Leininger, 1991).
5. *Culture of the non-traditional RN-BSN nursing student* –Registered nurses beyond twenty-one years of age who have life experiences and are furthering their education online (Seidl & Sauter, 1990).
6. *Learning* – a persistent change that may not be immediately noticeable in human performance or performance potential (Driscoll, 2005).

7. *Multimedia* –the presentation to form mental representations via multiple sensory modalities (Mayer, 2005; 2009).
8. *Multimedia learning* – learning that occurs as result of student engagement with multimedia (Mayer, 2005; 2009).
9. *Online learning* - is planned technology-facilitated instruction where teaching occurs in a separate location from learning. The term is often used synonymously with the term distance education (Moore & Kearsley, 2012).
10. *Problem-based learning* –a learner-centered instructional strategy first developed for use in health science fields (Barrows & Tamblyn, 1980) where the focus for learning is on students’ solutions to complex problems and situations (Boud, 1985; Savery, 2006).
11. *Project-based learning* – a learner-centered instructional strategy where learning is focused on a desired end-project or product where problems may be encountered along the way (Kilpatrick, 1921; Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palinscar, 1991).
12. *RN-BSN online nursing program* - is a program which offers diploma nurses or associate-degree nurses an opportunity to go back to school and earn a BSN in a nursing program that is delivered in an online format.
13. *Sociocultural theory* – views on learning that are situated within a social, cultural and historical lens (Vygotsky, 1978).
14. *Zone of proximal development* –the distance between what someone can accomplish independently and that which is obtained from the help of someone more capable (Vygotsky, 1978; Wertsch, 1991)

Organization of Remaining Chapters

This study's description is organized into five chapters. Chapter One provided an introduction to the study, a problem statement, a description of the study, and definitions of the study's key terms. Chapter Two provides a more detailed overview of the research in the areas of the cognitive theory of multimedia learning and their limitations for this study, sociocultural perspectives on learning and the principles of sociocultural learning, research on multimedia learning from a sociocultural perspective, an overview of the cultural of nursing education and the non-traditional nursing student, and previous attempts to examine multimedia use with online nursing students within problem-based and project based learning instructional designs, as well as a discussion of multimedia guidelines and current knowledge gaps. Chapter Three explains the research design, history of the program, description of the program, courses, and activities under study. The participants are described along with the data sources, procedures, and analysis, along with how trustworthiness was established, and validation methods. Chapter Four describes the results from the study by first providing an overview of the environment, and then followed by the results to the research questions. Chapter Five provides a discussion of the results as they relate to each of the research questions presented in this chapter, implications of this research, the limitations of the study, and suggestions for further research.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The focus of this study is to present multimedia guidelines that will inform future development of multimedia in an online RN-BSN nursing program. Thus, it is necessary to provide an overview of the decades of research in the field of multimedia learning in order to recognize not only the breadth of existing literature, but also bring forth its limitations. This analysis lays the foundation for how a more sociocultural perspective on learning may inform the guidelines through the consideration of authentic learning environments, activities, and the specific educational cultures in which the multimedia is embedded. This literature review will:

- provide an overview of multimedia learning, the multimedia guidelines, and describe the limitations for application to this study which a specific focus on authenticity;
- examine sociocultural perspectives on learning that informed this study and discuss research on multimedia learning from a sociocultural perspective;
- detail key aspects of nursing education culture and research examining multimedia within the context of authentic problem-based and project-based learning environments in nursing education;
- summarize the knowledge gaps and offer an overview of how a more sociocultural perspective on learning may inform multimedia guidelines.

Overview of Multimedia Learning

Multimedia learning has been discussed for decades by Richard Mayer (e.g., 1991, 2005, 2009, 2014) and others (e.g., Clark & Mayer, 2012; Moreno & Mayer, 1999; Plass, Chun, Mayer, & Leutner, 1998; Sweller, 2005a). Multimedia learning has consistently been discussed as building mental representations from words and pictures, whereas the multimedia is the presentation to form such representations via multiple sensory modalities (e.g., Mayer, 2001;

2005, 2014; Schnotz & Lowe, 2003). Its origins are grounded on cognitive views of human processing (Ausubel, 1969; Gagne, 1985; Piaget, 1964) with the following major assumptions:

- there are *active processing principles* where learning occurs with multimedia when text and images are attended to and organized meaningfully in working memory where information integrates with previous knowledge that is activated in long-term memory (e.g., Mayer, 2005; 2014).
- there are limits placed on *working memory* (Baddeley, 2003) in which we can only obtain a small amount of information, 7 pieces, plus or minus two (Miler, 1956) for a short amount of time (< 30 seconds) and consequently, learners have a limited capacity to process information (Baddeley & Hitch, 1974), specifically multimedia information that integrate multiple modes of graphic, text, and audio (Mayer, 2010);
- there are *cognitive loads* that can be placed on working memory (e.g., Sweller, 1988, 1994, 2005b; Pass, Renkle & Sweller, 2004) whether they are *intrinsic* to the difficulty of the subject matter (Sweller & Chander, 1994) and can not be changed by instructional treatments (Ayres, 2006; Sweller, 1998) , *extrinsic* to the subject matter evoked by instructional material and not contributing to learning goals (van Merriënboer & Sweller, 2005), or caused by *germane* loads imposed by the mental work needed by the learning process (Sweller & Chander, 1994); and,
- there are *dual channels for processing*, meaning one channel that will process verbal information and one to process visual information (Paivio, 1986) with a central executive which transports information into visual spatial sketchpad and phonological loop (Baddeley & Hitch, 1974).

Proponents of multimedia learning contend that you can create learner efficiency when irrelevant extrinsic loads are reduced, and relevant loads are increased, while managing intrinsic

and germane loads (Clark, Nguyen, & Sweller, 2006). There are decades of research that have led to recommended modes of multimedia in general (e.g., Mayer & Anderson, 1991; Mayer & Sims, 1994; Sung & Mayer, 2012) and recent research has illustrated the promise of its use in online learning environments (Clark & Mayer, 2008; 2011). The following section will provide an overview of the multimedia guidelines that are based on the multimedia learning principles.

Multimedia Guidelines

Mayer (2010) recommended his evidence-based techniques for multimedia learning guidelines to improve instruction. The guidelines focus on three overarching principles that are centered on supporting what happens in the mind: (1) *reducing extraneous processing*, (2) *managing essential processing*, and (3) *fostering generative processing*. The following section will provide an overview of these current cognitive-focused multimedia guidelines for instruction and then will describe the limitations for application to this study.

Reducing Extraneous Processing

According to Mayer (2010) a goal of the multimedia guidelines is to make sure the user does not reach cognitive overload so from a cognitivist perspective extraneous processing should be reduced. Therefore, Mayer suggests three principles for reducing extraneous processing: the (1) coherence principle, (2) signaling principle, and the (3) contiguity principle.

Coherence Principle. The coherence principle builds on the concept of complexity where Mayer (e.g., 2003; 2014) claims that people learn better when extraneous information is excluded. This view is based on the assumption of essential processing that is inherently needed to engage in the content (Clark & Mayer, 2011). The content itself has a level of complexity or intrinsic load while there are extrinsic loads that are created by the instructional situation (Sweller & Chander, 1994). While the condition of the learner will influence the efficiency of the learning situation (Clark, et al, 2006), the complexity of the content may create unnecessary

intrinsic load (Sweller & Chander, 1994). However, the studies examined do not focus on the inherent content complexity specifically, but consider complexity by examining extraneous load of the instructional situations (Sanchez & Wiley, 2006; Sung & Mayer, 2012).

Signaling Principle. Mayer's (2010) signaling principle focuses on highlighting essential information to focus and keep attention which is a strategy reported elsewhere in the literature (deKoning, Tabbers, Rikers & Paas, 2009). From a cognitive processing viewpoint, learners attend and select relevant information at the very beginning of the learning process (Mayer, 1999). Contrasting specific parts of a design message is one way to focus learners' attention at this stage (Fleming & Levie, 1993; Molenda & Boling, 2009; Rensink, 2011; Simons & Chabris, 1999).

Contiguity Principle. The idea of the spatial-contiguity principle is where people learn better when words are placed closer to the picture that it references (Mayer, 2010; Moreno & Mayer, 1999) and temporal-contiguity effect is when people learn better when visual and spoken words are learned better when they are presented simultaneously (Mayer & Anderson, 1991; Moreno & Mayer, 1999). Moreno and Mayer (1999) examined how 127 college students from a recruited psychology subject pool viewed computer animation of the process of lightening and were given a questionnaire, retention test, matching test, and 4-page transfer test. According to the authors, they believed that their analysis confirmed the contiguity effects on learning and support the multimedia principle which has been claimed by others from a cognitive perspective on learning (Paas & Van Merriënboer, 1994; Sweller & Chandler, 1994; Sweller, Chandler, Tierney, & Cooper, 1990).

Managing Essential Processing

From a cognitive perspective, essential processing that is needed to mentally represent information in working memory should be managed (Mayer, 2010). The inherent complexity of

the information requires users to select and organize content (Moreno & Mayer, 2007).

Therefore, Mayer (2010) recommends three principles to manage essential processing: (1) *pre-training principle*, (2) *segmenting principle*, and (3) *modality principle*.

Pre-training Principle. The pre-training principle suggests that people learn better with multimedia lessons when they know the names and characteristics of key concepts and should be provided with information prior to the lesson (Mayer, 2010). Mayer (2010) suggests the guideline is to support making cognitive connections, while other researchers (Mayer, Mathias, and Wetzell, 2002) support the pre-training principle as an extension of embedding instruction within the context of the learner's prior knowledge (Ausubel 1969 as cited in Mayer et al., 2002).

Segmenting Principle. The segmenting principles suggests that multimedia lessons should be broken into learner-controlled segments (Mayer, 2010). Clark (2011) and others (Clark et al., 2006; Mayer & Chandler, 2001; Mayer, Dow, & Mayer, 2003) discuss how learners who receive broken down presentations learn better as demonstrated on transfer tests than those who watch a continuous presentation. Moreno (2007) reinforced this principle by illustrating that teachers who watched 20 minutes of video performed worse than students who had the same material broken down into smaller seven segments. Pollock, Chandler, and Sweller (2002) also compared lessons that were segmented verses not segmented with first-year undergraduate students who were learning electrical test procedures. They reported that the students who studied the segmented version of the lesson performed better on a written and practical test. Pollock et al. (2002) concluded that, "When dealing with very complex information, in order to allow novice students to process interacting elements, the intrinsic cognitive load of the material should initially be artificially reduced. This allows serial rather than simultaneous processing of information, thus reducing working memory load" (p. 83). These perspectives are in alignment with the cognitive perspective that there are limits placed on working memory (Baddeley, 2003)

in which we can only obtain a small amount of information, 7 pieces, plus or minus two (Miler, 1956).

Modality Principle. The modality principle suggests using audio with graphics rather than text alone (Mayer, 2005) because of the dual-channels for processing (Paivio, 1986). Recently, Clark and Mayer (2011) suggest that there may be conditions that may impact this use. Specifically, they claim that it may be beneficial to use on screen text as well as audio with graphics when the material is complex or fast paced but, if learners have control over the experience, it may not be as beneficial. Other studies found similar conditions where the modality principle is not applicable for all situations (Mayer, Heiser, & Lonn, 2001; Moreno & Ortengano-Layne, 2008).

Fostering Generative Processing

Mayer (2010) claims that people may have the capacity to process the information but may not be inherently motivated to do so and experience generative underutilization. From his cognitive perspective, the guidelines must take into account the following principles to foster generative processing: (1) *multimedia principle*, (2) *personlisation principle*, and (3) *voice principle*.

Multimedia Principle. The multimedia principle is key to Mayer's (2005, 2010) work in that it is believed that people learn better from pictures. While their claim is more general, other researchers claim the use of graphics and text depends on the type of task (Rash & Schnotz, 2009): conceptual tasks with text and graphics (Hannus & Hyona, 1999; van Genuchten, Scheiter, & Schuler, 2012), procedural tasks with text and animation (Ayres, Marcus, Chan, & Quian, 2009; Rasch & Schnotz, 2009) or with graphics (van Genuchten et al. , 2012), causal tasks with text and graphics (Mayer & Gallini, 1990). Nonetheless, each one focused on different dimensions (e.g., instructional, learners' prior knowledge, learning objective).

Personalisation Principle. The personalisation principle is recommended where words are presented in multimedia in conversational or polite style (Mayer, 2010). Moreno and Mayer (2000) looked specifically at the way message design can impact transfer based on the way messages are presented to the learner to engage them as active participants. Between the two different types of multimedia lessons, the authors reported that recall of the material was consistently better with groups that received personalized messages regardless of whether the message was speech or on-screen text.

Voice Principle. Related to the personalisation principle, the voice principle suggests including voice of a human over a machine voice in Mayer's (2010) words, "the rationale behind this is that people try harder to make sense of what a narrator is saying when they feel they are in a social partnership with the narrator" (p. 548). In other studies, Moreno and Mayer (2000) claimed that the self-referencing from the computer agent via audio promoted active engagement from the learner and improved recall. This finding is supported by others in the literature that have illustrated the benefit of audio messages presented by animated agents (Atkinson, 2002; Craig, Gholson, & Driscoll, 2002; Mayer, Dow, & Mayer, 2003).

Limitations of Guidelines for this Study

Each multimedia guideline that was presented is grounded on the cognitive perspective of learning where learning is focused on actively reorganization of knowledge in the mind, which is based on more of an acquisition than participatory metaphor of learning (Sfard, 1998). Sfard (1998) describes a participatory metaphor of learning as situated, contextual, and socially mediated. There is misalignment between multimedia learning and the guidelines as it has been historically discussed (e.g., Mayer, 1991, 2005, 2009, 2014) and the nature of how these specific online courses and multimedia were designed. As Bonk and Cunningham (1998) argued, "problems arise...when tools developed in the service of one epistemology, say cognitive

information processing, are integrated within instructional systems designed to promote learning goals inconsistent with it” (p. 25). The online RN-BSN courses were designed to create curriculum experiences that are transformational for nursing students by having practical implication to nursing practice (Anderson & Tredway, 2009). There is not consideration in the multimedia guidelines with an emphasis of the authenticity of the environment, activities and tools within context of a social situated dynamic space, which is considered essential from more sociocultural learning perspectives (Wells, 1999). Moreover, the guidelines do not include discussions of how of how external influences such as educational culture and views of authenticity, may impact not only designer and subject matter expert’s views, but also how instructors and students report what multimedia they desire in their learning experiences.

Specifically, there have been questions of the applicability of Mayer’s multimedia learning principles and guidelines for all learners in all contexts and conditions (Austin, 2009; Tabbers, Martens, & van Merriënboer, 2004; De Westelinck et al., 2005). Nonetheless, external and internal processes have been described as being shaped by community in which the learning occurs (Rogoff, 1990). Current studies place emphasis on student performance specifically on an internal plane of the learner with no considerations of the ongoing and dynamic interactions between both internal and external processes that make up the learning community.

Lack of Authenticity

Additionally, authenticity is not a consideration of the current multimedia guidelines. The multimedia principles do not take into consideration the possible impact of the settings in which thinking and learning occurs. Also, they do not take into consideration the possible impact of student reported needs for learning and their influences. Yet, there has been much discussion in the literature in the past several decades regarding the value of the authenticity of a learning experience, where learning activities are situated in meaningful contexts to the learners (e.g.,

Barab, Square, & Dueber, 2000; Brown, Collins, & Duguid, 1989; Herrington & Oliver, 2000; Herrington, Reeves, Oliver, & Woo; 2004; Petraglia, 1998a) and focus on real-world problem-solving and applications that engage students in virtual communities of practice (e.g., Lave & Wenger, 1991; Lombardi, 2007; Wenger, 1998). Some suggest that the value of well-designed multimedia learning environments provide the opportunity to create simulated apprenticeships that bring real life experiences to the learners virtually as well as support their learning activities (Reeves, 1993) and mediate human dialogue (Lave & Wenger, 1991).

However, as Herrington, Oliver, and Reeves (2003) and others (Petraglia, 1998a) have brought forth, authenticity cannot be predetermined and what an instructional designer or instructor believe to be authentic may not be authentic and or useful to the learners. Thus, some have suggested that even if authenticity was considered with the design of learning experiences, the question of authenticity still may come into play because the experiences are based on someone else's view of what constitutes as being authentic (Gulikers, Bastianes, & Martens, 2005; Herrington et al., 2003).

The current multimedia learning studies that support the multimedia guidelines do not examine multimedia with considerations of authenticity specifically. For example, to support their coherence principle, Sung and Mayer (2012) observed 200 university students in South Korea in a computer lab interacting with a web-based learning lesson. The researchers compared the value of the following graphics: *seductive* to elicit interest but serve no instructional purpose, *instructive* that aligned to instructional goals, and *decorative* or neutral. They found that students had higher ratings of satisfaction when they experienced any type of graphic versus no graphic at all, but those that received instructive graphics performed better on post-tests. However, the discussion does not bring forth how the population under study may differ in educational values and have different needs that are necessary to support their learning in light of the cultural

context and activities in which they engaged, which is a supported view of inquiry in the literature (Kaptelinin, 2013; Kaptelinin & Nardi, 2012; Wells, 1999).

Moreover, in another study to support their pre-training principle, Mayer, Mathias, and Wetzell (2002) conducted several experiments with pre-training groups and groups that did not receive training. With each experiment the groups were given a questionnaire, a pre-training diagram, a retention test, and four transfer tests on a narrated animation that explained in a male's voice the car's braking system or on a bicycle tire pump. While they claimed that people learned better from this experience when they know the names and characteristics of key concepts, it is not discussed in context of the authenticity of the experience. Others have discussed how the experience may differ depending on the learning experience, activities, and culture that embodies the experience (Bonk & Cunningham, 1998, Cobb, 1994). In order to support learners, a key consideration has been urged as a focus is authenticity specifically (Wells, 1999).

A lack of focus on what authenticity means from a designer, instructor, and learner perspective in regards to the multimedia and the learning experiences and activities is a consistent limitation with multimedia learning studies (e.g., Clark & Mayer, 2011, Mayer, 2010; Mayer, Heiser, & Lonn, 2001; Moreno 2007; Moreno & Mayer, 1999; Pollock, Chandler, & Sweller, 2002; Rensick, 2011). There does not seem to be an interest on what is most relevant and meaningful to support and assist learners even when concepts, like personalisation principle is discussed (Mayer, 2010). There are not practical guidelines that take into consideration of authentic practice for cultures within a dynamic learning space even though considerations of authenticity is urged from recent discussions grounded in more sociocultural views of learning (Barnas & Zheltoukhova, 2014) The following section will review specific sociocultural perspectives of learning that informed this study.

Sociocultural Perspectives on Learning

Traditionally, multimedia learning is centered on the cognitive views of human processing where the focus is on the multimedia content and what happens in the mind. This perspective does not take into account views on learning that are situated (Greeno, 1997; Lave & Wenger, 1991; Resnick, 1987) and tied to context, culture, and authentic activity (Bonk & Cunningham, 1998; Cobb, 1994; Gibson, 1977) where the learner is an active participant, as Rogoff (1991) put it, "...in shared sociocultural endeavors" (p. 210). These participatory perspectives (Sfard, 1998) are grounded on sociocultural approaches to learning (Vygotsky, 1978) which originated with Vygotsky and his colleagues in Russia in the 1920s and 1930s and have a wide range of applications and interpretations (e.g., Davydov & Radzikhovskii, 1985; John-Steiner & Mahn, 1996; Minick, Stone, & Forman, 1996; Moll, 1990; Wertsch, 1991) with aspects of the theory being discussed and applied in varied disciplines such as the social sciences, linguistics, communications, theology, social work and philosophy (McInerney, Walker, & Liem, 2011; Tharp, 1997).

While the main tenants of sociocultural perspectives have been described in various publications by many authors (e.g., Bonk & Cunningham, 1998; Bonk & Kim, 1998; Cobb, 1994; Driscoll, 2005; Johnson, 2009; Polman, 2006, McInerney et. al., 2011) and have led to varied approaches based on the emphasis of the perspective (McInerney et al., 2011; Stetsenko & Arieivitch, 2004), such as sociocultural psychology (Wertsch, 1991, 1998), cultural-historical psychology (Cole, 1988; Brushlinksy, 1968), activity theory (Engestrom, 1987, Kaptelinin, 2013; Kaptelinin et al., 1999; Kaptelinin & Nardi, 2006, Sannino, & Gutiérrez, 2009), and cultural-historical activity theory (Cole, 1995), the general tenants are mainly consistent with the summary provided by John-Steiner and Mahn (1996) that is based on the analysis of Wertsch's (1991) writings. In the author's words:

They [the tenants] are based on the concept that human activities take place in cultural contexts, are mediated by language and other symbol systems, and can be best understood when investigated in their historical development (p. 191).

The sociocultural perspective considers the social and cultural space in which the individual is embedded (Tudge & Rogoff, 1989). Thus, the focus is on how knowledge is distributed among people through meaningful actions among their cultural system (Grover & Pea, 2013; Wenger, 1998) within authentic contexts (Jonassen, 1999) and with the appropriation of the tools and artifacts that support their inquiry (Leontiev, 1981) within students' zone of proximal development (ZPD) (Vygotsky, 1978). The principles of sociocultural theory that informed this study were outlined by Bonk and Cunningham (1998): *Zone of Proximal Development (ZPD), scaffolded learning, mediation, internalization, assisted learning activity setting as unit of analysis and distributed intelligence in a learning community.*

Principles of Sociocultural Learning

ZPD. ZPD originated with Vygotsky (1978), who defined it as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers” (p. 86). From a sociocultural perspective, students may be able to work within their ZPD with the influence of its tools and artifacts (Bonk & Cunningham, 1998) and/or with the support of social interactions that assist in re-structuring thoughts (Salomon, 1998). There has been a broadened perspective of ZPD from a sociocultural perspective that moves the discussion from a fixed attribute of the learner to an interactive space between learners, the culture's toolkit, and the activity setting (Wells, 1996).

According to Wells (1999), “...tools –including cognitive artifacts—are created at a particular moment in the historical trajectory of a culture, in response to the demands of the

activity in which they are used, and that they continue to be modified, in use, by those who continue to activity” (p. 315). ZPD is viewed as an attribute not of the student alone, but of the student in relation to an activity that are meaningful and relevant to the students when they engage in them (Wells, 1995). The role of the student is the primary focus of traditional views of ZPD where there is consideration of what level to pitch the instruction (Hedegaard, 1990) or how to differentiate instruction for groups of students (e.g., Lawrence-Brown, 2004; Tomlinson, 1999; Tomlinson, 2004).

Wells (1999) is among those who emphasizes a more sociocultural view of the focus of ZPD where there is a movement away from focus on the individual students towards emphasis of the importance of situating learning activities among the participants within the dynamic space. The ZPD, in his words, “is *created in the interaction* between the student and the coparticipants in the activity, including the available tools and the selected practices, and depends on the nature and quality of that interaction as much on the upper limits of the learner’s capability” (p. 318). This lends itself to studies that examine the specific uses of multimedia within dynamic contexts that employ authentic learning activities.

Authentic Activities. Activities, in general, have been defined as, “anything students are expected to do, beyond getting input from reading or listening, in order to learn, practice, apply, evaluate, or in any other way respond to curricular content” (Brophy & Alleman, 1991; p. 9), while from a more sociocultural perspective it has been stated that, “an activity is a form of doing directed to an object, and activities are distinguished from each other according to their objects” (Nardi, 1996) and as others say, “...are composed of goal-directed actions that must be undertaken to fulfill an object (Kaptelinin & Nardi, 1997) and can be understood as a, “...unit of life of a material subject existing in the objective world” (Kaptelinin (2013, ¶11). Kaptelinin (2013) urges in today’s world that just focusing research on tasks themselves are not enough. In

his words, “understanding and designing technology in the context of purposeful, meaningful activities is now a central concern of HCI [Human-Computer Interaction] research and practice” (Kaptelinin, 2013; ¶2).

In order to define an authentic activity, Herrington et al. (2004) presented a list of 10 characteristics that are grounded on decades of research on authentic instruction. Herrington et al. (2004) described authentic activities as having the following characteristics:

1. Authentic activities have real-world relevance;
2. Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity;
3. Authentic activities comprise complex tasks to be investigated by students over a sustained period of time;
4. Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources;
5. Authentic activities provide the opportunity to collaborate;
6. Authentic activities provide the opportunity to reflect;
7. Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes;
8. Authentic activities are seamlessly integrated with assessment;
9. Authentic activities create polished products valuable in their own right rather than as preparation for something else; and
10. Authentic activities allow competing solutions and diversity of outcome.

(p. 7)

These 10 characteristics provide a framework for evaluating activities for authenticity from the designer’s perspective. Researchers have examined authenticity through the dynamic

interactions of the learner, task, and environment (Barab et al., 2000; Herrington & Oliver, 2000). Activities cannot be understood in isolation from the external factors because, in Kaptelinin, Nardi, and Macaulay (1999) words, "...it is the constant transformation between external and internal that is the very basis of human cognition and activity" (p. 29). Thus, as Barnas and Zheltoukhova (2014) urged, what are authentic practices for cultures should be explored and understood. Such perspectives build on more sociocultural views of learning.

Scaffolded Learning. The term scaffolding, initially introduced by Wood, Bruner, and Ross (1996), has been widely used and studied across ages and disciplines, specifically with multimedia (e.g., Azevedo, 2005; Brush & Saye, 2002, Saye & Brush, 2002), technology-enhanced classrooms (Danish, Peppler, Phelps, & Washington, 2011), and online learning environments (Stavredes & Herder, 2013) to describe what supports are necessary to narrow students' zone of proximal development.

Scaffolds have been discussed in terms of function: *gaining attention, focusing attention, emphasizing features, modeling, eliminating frustrations, providing support for task completion* (Wood, et al., 1996) and types: *hard* and *soft* (Brush & Saye, 2002), *procedural, conceptual, metacognitive*, and *strategic* (Hannafin, et al., 1999). Brush and Saye (2002) define *soft* scaffolds as, "...dynamic, situation-specific aid provided by a teacher or peer to help with the learning process" (p. 2) and *hard* scaffolds as, "...static supports that can be anticipated and planned in advance based upon typical student difficulties with a task" (p. 2). Additionally, Hannafin et al. (1999) define *procedural* scaffolds as those that guide learners, "...how to utilize resources and tools" (p. 133), *conceptual* scaffolds as those that engage learners in, "...what to consider" (p. 131), *meta-cognitive* scaffolds as those that guide learners in, "...how to think" (p. 131), and *strategic* scaffolds as those that guide learners with, "approaches to learning tasks or problems" (p. 162) with a focus on alternative perspectives.

Assisted Learning. The role of the teacher in a sociocultural practice has been described as assisting learning and not directing it (Tharp & Gallimore, 1988). Tharp and Gallimore (1998) describe strategies that Tharp (1993) initially presented for assisting performance as (a) modeling, (b) feedback, (c) contingency management, (c) instructing, (d) questioning, (e) cognitive and (f) task structuring. The authors contend that teaching is an instructional conversation that facilitates new meanings and insights. Bonk and Kim (1998) built on Tharp's (1993) and Collins, Brown, and Newman (1989) views of cognitive apprenticeship to articulate into ten sociocultural-based views of teaching that Bonk and Cunningham (1998) urged would support such rich instructional conversation:

(a) *modeling* to illustrate performance standards and verbalize invisible processes; (b) *coaching* to observe and supervise students, thereby guiding them toward expert performance; (c) *scaffolding and fading* to support what learners cannot yet do and gradually removing that support as competence is displayed; (d) *questioning* to request a verbal response from learners while supporting them with mental functions they cannot produce alone; (e) encouraging student *articulation* of their reasoning and problem-solving processes; (f) pushing student *exploration* and application of their problem-solving skills; (g) fostering student *reflection* and self-awareness (e.g., through performance replays); (h) providing *cognitive task structuring* by explaining and organizing the task within students' ZPDs; (i) *managing instruction* with performance feedback and positive reinforcement, and (j) using *direct instruction* to provide clarity, needed content, or missing information. (p. 72).

This example illustrates how assisted learning and scaffolding are closely related. As in the Bonk and Cunningham (1998) example, scaffolding can even be included as a type of assisted learning.

Mediation. From a sociocultural viewpoint, knowing is dependent on the artifacts and tools that learners jointly engage with around some aspect of an undertaken activity that is culturally situated (Wells, 2004). From a sociocultural perspective, Kaptelinin (2013) described that both the external factors and the internal conditions are closely connected and mutually determine the other. As stated by Kaptelinin (2013), "...the emergence of complex system of objectives and structures, both material and immaterial which serve as mediating means embedded in the interaction between human beings and the world and shaping the interaction" (¶18). According to this view, tools, signs, and socially developed artifacts shape or mediate external behavior and influence internalization (Kaptelinin & Nardi, 2012a; Kaptelinin & Nardi, 2012b).

Internalization. Internalization is central to Vygotsky's ZPD, whereas Vygotsky put it, "...all higher mental functions are internalized social relationships" (1981, p. 164). There are some that question the connections that Vygotsky draws between the external and internal planes and social and mental functioning. (Wells, 1999). While some authors describe internalization moving from an external to an internal plane (e.g., Bonk and Cunningham, 1996; Kaptelinin, 2013; Kaptelinin & Nardi, 2012b), there is also discussion of how externalization, or transformation of internal to external activities (Kaptelinin, 2013; Leont'ev, 1978) can support internalization when it is socially distributed and contextual (Kaptelinin, 2013). The learning environment and the processes both external and internal dynamically shape one's thinking within the community they are embedded (Rogoff, 1990). As Wells (1999) put it:

The distinction between individual and social is thus not to be understood as a spatial separation between two distinct entities, such that functions can pass between them but rather as the adoption of one or other of two different analytic perspectives on an

individual's participation in activity, where the activity is inherently social and cultural, although carried out at any time by particular individual participants (p. 322).

Activity Setting as the Unit of Analysis. Bonk and Cunningham (1998) described how activity or word meaning should be the unit for analysis for research from a sociocultural perspective. This claim has been supported in the past (Cole & Engestrom, 1993; O'Donnell, Tharp, & Wilson, 1993) and in more recent years with an interest in building theory specific to activities in real contexts (e.g., Kaptelinin, 2013; Kaptelinin, 2011; Kaptelinin & Nardi, 2006, Wilson, 2008; Sannino, & Gutiérrez, 2009). Cole and Engestrom (1993) describe the activity systems, from a cultural-historical perspective, as the subjects, rules, communities, mediating artifact, objects, and divisions of labor. According to the authors, such activity systems are complex in nature and reveal the dynamics of human evolution as they are, "...historically conditioned systems of relations among individuals and their proximal, culturally organized environments" (p.9).

Distributed Intelligence in a Learning Community. According to sociocultural perspectives, one's mind is socially distributed not only by peers in the immediate environment, but also by those of prior generations (Cole & Engestrom, 1993) and the tools that are situated within (Wells, 1996). Pea (1993) discusses how intelligence can be viewed as distributed, "...across minds, person, and the symbolic and physical environments, both natural and artificial" (p. 47) where knowledge is socially distributed, which draws inspiration from sociocultural theory (e.g., Cole, 1995; Lave, 1996; Rogoff, 1997) which is of contrast to views on knowledge residing in an individual's mental functioning. Pea (1993) recognizes how intelligence can be mediated by computing which been of interest in recent years with attempts to understand how technology might support and enhance collective understanding (Parchoma, 2014) with a focus on the authentic cultural practices (Barnas & Zheltoukhova, 2014). As Bonk

and Cunningham (1998) questioned, “What types of electronic tools foster negotiation of meaning and sophisticated conversations among community participants? When sociocultural theory is finally merged with electronic tool development and use, the answers to these questions may arise in rich, instructional conversations...” (p. 43). The following section will review research on multimedia learning from sociocultural perspectives.

Research on Multimedia Learning from Sociocultural Perspectives

Literature examining multimedia in light of both authenticity and all of the principles of sociocultural views outlined is limited. However, there have been publications in social sciences specific to multimedia that while situated from other learning perspectives do reflect some of the sociocultural views. For example, The Cognition and Technology Group at Vanderbilt (1990) use multimedia to anchor instruction around authentic perspectives. The Cognition and Technology Group at Vanderbilt (1990) state that their goal of anchored instruction is to create environments,

...that permit sustained exploration by students and teachers and enable them to understand the kinds of problems and opportunities that experts in various areas encounter and the knowledge that these experts use as tools.... to help students experience the value of exploring the same setting from multiple perspectives. (p. 3)

Examples of the Jasper Series (Cognition and Technology Group at Vanderbilt, 1990) and the STAR (Software Technology for Action and Reflection) LEGACY framework (Schwartz, Brophy, & Bransford, 1999) illustrate the use of multimedia as a tool to support student inquiry in order to mediate students mental functioning within an authentic context (Wertsch, 1991). Specifically, the Jasper Series comprised of video-based challenges that were presented to six-grade mathematics students. The authors describe that the benefit of the videos is that they provide embedment of data students need to solve complex problems. Although not

grounded from a sociocultural perspective, one could inquire how multimedia may serve as a tool to mediate internalization in the context of the problem-solving environment with the six-grade students.

Subsequently, the authors introduced the STAR LEGACY framework and embedded it within experiences like the Jasper Series (Cognition and Technology Group at Vanderbilt, 1997) to provide additional structure to students' inquiry. While the views are grounded in Vygotsky's ZPD, the STAR LEGACY framework is discussed from more of a lens of how it can provide structure in a problem-based context so that students are able to construct understanding of the material. For example, the framework provides a series of steps where students are presented with a video-challenge and have to generate initial ideas for the challenge. Within in the framework, students engage in multiple perspectives presented as videos, research and revise their understandings, test their understandings, go public with their ideas, see what is ahead, and reflect. The framework provides planned guidance to allow more time for collaborative inquiry.

The multimedia presented within the STAR LEGACY framework is meant to build on students' current knowledge and interest and also was anchored to problems that real experts in the field experience, but it does not place authenticity at the forefront. The Jasper Series and the STAR LEGACY illustrate how multimedia embedded within thoughtful instructional contexts may serve as the tools that mediate mental thought patterns and facilitate learning in social contexts within students' ZPD. However, the question becomes even when the designer believes the design is a thoughtful context for learning, the culture that engages may consider authenticity differently across learning environments, activities and the tools situated within (Gulikers, et al., 2005).

Media to support students in their ZPD has been explored elsewhere in the literature focused on the activity systems in which they are embedded (Gresalfi, Martin, Hand, & Greeno,

2008; Danish, Peppler, Phelps, & Washington, 2011) with interest in its potential to transform learners into virtual worlds (Barab, Gresalfi, & Ingram-Globe, 2010) through engagement in contextual games (Gresalfi & Barab, 2011). In addition, there are those who recognize the potential of multimedia learning environments to provide the infrastructure to support transformative communications across social and individual processes (Pea, 1994; Pea & Gomez, 1992; Zah, Pea, Mills, Rosen, Hesse, & Finke, 2005). For example, Pea (2006) explored the potential of videos to provide a common reference for sharing, collaborating, and knowledge building online. With the Digital Interactive Video Exploration and Reflection Project (DIVER) at Stanford University, the author aimed to provide a tool for mediating and studying co-construction of knowledge through video and audio recordings. DIVER aims to support exploration of the same event from multiple perspectives and to develop digital communities around perspective sharing (Pea, n.d.). With the DIVER tool, real world events are recorded and then encoded, commented on, and then shared online forming a broader semiotic system (Pea, Mills, Rosen, Dauber, Effelsberg, & Hoffert, 2004). From a sociocultural perspective, such use of multimedia supports the themes highlighted by Wertsch (1991) and restated by (John-Steiner & Mahn, 1996):

Individual development, including higher mental functioning, has its origins in social sources; human action, on both the social and individual plans, is mediated by tools and signs; the first two themes are best examined through genetic or developmental analysis (p. 192).

This study touched on the tenants of sociocultural theory without explicitly exploring the interrelationships of these themes (Bañados, 2006; Pea, 1994).

In summary, while there are many interpretations on sociocultural theory, there appears to be some agreement from this perspective that human activities take place in socially and

cultural shaped contexts, is mediated by tools and signs, and can be understood when investigated in their historical development. However, there are limited studies that explore multimedia learning with a focus on authenticity from a more sociocultural, situated perspective. Past studies place emphasis on internalization and not the environments the internal processes are situated. To understand cultural mediation, according to Cole and Engestrom (1993) is to imply, "...a species-specific mode of developmental change in which the accomplishments of prior generations are cumulated in the present as the specifically human part of the environment; the culture is, in this sense history in the present." (p.9). The next section will provide an overview of the nursing education culture to provide the background of the broader nursing education cultural context that will be the subject of this study.

Overview of the Culture of Nursing Education

The term culture has been used all over the world in several disciplines and described in many different ways (Leach, 1982), but as Suominen, Kovasin, and Ketola (1996) stated, "As every culture has a more or less individual, distinctive shape of its own, cultures can be distinguished from each other" (p. 187). The concept of culture specific to nursing is closely aligned to the interwoven values of the nursing community (Suominen et al., 1996) that has a shared system of values, beliefs, meaning (Burnard & Gill, 2009; Katz, 2005).

Suominen et al., (1996) define nursing culture as, "...the entity of the cultural features that separate forms and systems in nursing." (p. 187). Nursing culture has been described as an art and science centralized in providing safe compassionate care to patients and families (e.g., Burnard & Gill, 2009; Nelson & Gordon, 2006; Hood, 2014; Hooper, 2006) which stems from the historical perception that a nurse's role is to care for the sick (Holland, 1993). Hood (2014) explains that, "Professional nurses use science as a basis for professional practice and art when modifying care approaches" (p. 4). However, the author points out how there are debates around

nursing as a profession and what education constitutes as a “qualified nurse.” These are not new discussions in the nursing literature (Holland, 1993; Huston, 2006; 2014; Maas, 2011) and has led two overarching subcultures of learning communities caring for the sick: nurses practicing with BSN degrees and those without. Comparisons between the two groups’ skillsets in practice has created a debate within the nursing educational culture that influences what is learned and how it is learned.

The BSN verses ADN Debate embedded in the Nursing Education Culture

Nursing educators discuss the long-standing, contentious, entry-into-practice debate that is embedded into the nursing education culture (Ellis & Hartley, 2004; Hood, 2014; Huston, 2014; The Institute of Medicine (IOM) 2011). Huston (2014) describes how this debate dates back to the 1940s and came to the forefront in 1965 with the American Nurses Association (ANA) publications (ANA, 1965a; 1965b) that recommended a transition from hospital-based nursing preparation to nursing education provided in colleges and universities. The articles’ main premise, as summarized by Huston (2014), was as follows:

- The education of all those who are licensed to practice nursing should take place in institutions of higher education.
- Minimum preparation for beginning professional nursing practice should be baccalaureate education in nursing.
- Minimum preparation for beginning technical practice should be associate education in nursing.
- Education for assistants in the health care occupations should be short, intensive, preservice programs in vocational education institutions rather than on-the-job training programs. (p. 3).

The impact of this publication led nursing educators to create different educational pathways for registered nurses (RNs): the technical and the professional (Huston, 2014). IOM (2011) describes three different paths RNs can pursue within the technical versus professional curriculum: the associate's degree in nursing (ADN), the diploma in nursing, and the bachelor's of science in nursing (BSN). The technical curriculum track involves nurses enrolling in a 2-year community or junior college program that would result in an associate degree in nursing (ADN) or a diploma in nursing and allow a nurse to practice in acute bedside care under the supervision of a professional nurse. The professional track is occupied by bachelor's prepared or higher nurses who receive education and training from 4 year colleges or institutions.

The benefits of ADN programs are reported to be less expensive and take less time to complete which can get nurses into practice quicker in a field that has a shortage of nurses (Hooper, 2014). Nurses who participate in a technical ADN program are under the supervision of a head nurse in an acute care setting, such as short-term clinic treatment facilities (Huston, 2014). However, the general view is that while this provides an option to get more nurses practicing nursing, these technical programs make the nursing field appear less professional given that they only require two years of technical education and are working under the supervision of another nurse, which in turn limits their leadership opportunities (Nelson, 2002). There is overarching perception that is grounded in the culture that BSN programs hold greater rewards than the ADN nurse because there is more room for professional growth and success (Hood, 2014). Prior generations have held this view which bring such views to the present (Cole & Engeström, 1993). Thus, there continues to be an articulated need for more education for entry level nurses (e.g., AACN, 2003; Bener, Sutphen, Leonard, & Day, 2009; Carnegie Foundation for the Advancement of Teaching; 2010; IOM, 2011; Pew Health Professions Commission, 1998; Rosseter, 2011).

With a bachelor's of science in nursing (BSN), nurses take half general education courses and also half nursing courses. The benefits of the BSN are reported to prepare nurses for broader scope of practice for future employment going beyond the traditional technical aspects of nursing (AACN, 2003) and, in Huston's (2014) words, "...provide a better understanding of the cultural, political, and social issues affecting patients and health care delivery" (p. 4). This is supported elsewhere with others such as IOM (2011), an institute in the medical industry which urges that "nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression" (p. 1). These claims have been justified by empirical studies that provide evidence of the direct benefits of BSN degrees in improving patient care and influencing health care delivery (e.g., Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Goode, Pinkerton, McCausland, Southard, Graham, & Krsek, 2001; Rosseter, 2011; Van den Heede., Lesaffre, Diya, Vleugels, Clarke, Aiken, & Sermeus, 2009).

Others report that BSN degrees provide nurses the opportunity to make more money and serve in leadership and management roles (Hooper, 2014). Because the debate of what degree is necessary for entry into practice has been going on for decades, the American Nurses Association House of Delegates proposed a solution which would require any nurse to obtain a BSN degree within 10 years of license (American Nurses Association, n.d.). This proposal is supported in the nursing community (Carnegie Foundation for the Advancement of Teaching; 2010), and conceivable would be implemented through RN-BSN degree programs. Even with such proposed solutions, there has been no resolution as to what degree is necessary for the entry into practice despite the interest in more education for nurses (Hooper, 2014)

Traditional to Innovative Approaches to Curriculum

Given the heightened interest in more education, academic nursing programs are compelled to look for ways to attract, retain, and ultimately prepare nurses for future

employment in the dynamic health care field. Traditional nursing programs have been said to isolate education and research from the delivery of care with teaching occurring in the face-to-face classroom and clinical education happening in practice (Pew Health Professions Commissions, 1998). These programs have been described as content-laden and highly structured with behavioral focused outcomes (Diekelmann, 2002; National League for Nursing (NLN), 2003), which some claim have led to teacher-centered models (Giddens & Brady, 2007; Stanley & Dougherty, 2010) where nursing educators' primarily emphasize covering content instead of considering the processes of learning (Bevis & Watson, 1989).

In 2003, the NLN (2003) challenged nursing education programs to create curriculum that is "...flexible, responsive to students' needs, collaborative, and integrated current technology" (p. 1). They contend that this new approach would require a move away from the traditional curricular models. According to Stanley and Dougherty (2010), this call for rethinking education in nursing led to a push for innovative pedagogy, that in their words, "...now floods the literature" (p. 378) and is supported by the evidence they provided (e.g., Candela, Dalley, & Benzel-Lindley, 2006; Diekelmann, Ironside, & Gunn, 2005; Ironside, 2001; Ironside, 2004; Ironside & Valiga, 2006; NLN, 2003, 2005; Randell, Tate & Loughheed, 2007) and by more recent calls for change (e.g., Forbes & Hickey, 2009; Lombardi, Sutphen, & Day, 2013; Mauro, Hickey, McCabe, & Ea, 2012; Stanley & Dougherty, 2010).

The call for change has created a shift for many to move from the "sage on the stage" teaching and learning paradigm to a more "guide on the side" perspective (Stanley & Dougherty, 2010). Instead of the transmission of knowledge from the teacher to the nursing student, more learner-centered approaches are recommended to prepare nurses with the necessary critical thinking skills for the real medical world (Benner, et al., 2009; Candela, et al., 2006).

Online learning is one platform that is seen as an innovative approach to create such flexible learner-centered instruction and that holds the potential to transform nursing education (Bently, Cook, Davis, Murphy, & Berding, 2003; Lombardi et al., 2013; Shovein, Huston, Fox, & Damazo, 2005; Stone & Perumean-Chaney, 2011). Online learning has been defined as where teaching occurs in a separate location from learning (Moore & Kearslely, 2012). In January 2014, it was estimated that there were at least 400 RN-BSN programs that were being offered at least partially online (Rosseter, 2014) to “non-traditional students.”

Seidl and Sauter (1990) conducted a comparison study of “non-traditional” to “traditional” adult nursing students in a baccalaureate program of nursing. They compared 51 students that were classified as “non-traditional” or those who were beyond 21 years old and had interruptions in education where they were engaged in full-time employment or other life experiences and 78 “traditional” students who were 21 years or younger and no major work experiences prior to beginning nursing education. They compiled data through surveys, personal communication, and a survey where participants responded with various types of learning activities. Participants included 16 males and 113 females which the authors noted was respective of the male-female ratio of the population under study.

The authors reported that the “non-traditional” nursing student tended to report learning preferences which favored more discovery types of learning activities that build on their experiences and resources from their life experiences. They also found that “non-traditional” nursing students reported preference to self-directed activities and had overall higher mean GPAs 3.28 (n=51) at the end of fall semester compared to the traditional nursing students with a GPAs of 3.06 (n=78). Marital status and children differentiated the groups; 43% of the “non-traditional” students had children compared to none of the “traditional” nursing students. Moreover, all of the “traditional” students were single where a third of the “non-traditional”

students were married and 3.2% were divorced. Sources of psychological support were a significant difference ($\chi^2 = 9.76, df = .5, p < .10(.082)$) between “traditional” and “non-traditional” nursing students where “traditional” received such support from classmates, parents, and friends and “non-traditional” received their psychological support from their spouse or significant other. Additionally, “non-traditional” nursing students were found to have significantly more years of higher education experience ($\chi^2 = 65.5, p < .05(.016)$) where they already hold college degrees and had significantly higher degree aspirations and most reported being self-supporting compared to the “traditional” nursing students who were supported by their parents. However, the groups did not seem to differ in the time they spent in the course.

The results from Seidl and Sauter (1990) are similar to how others describe the “non-traditional” nursing student, where they are described as typically older than 25, may have studied in college previously, are not full time students because they hold jobs or have children, and may earn higher grade point averages (Strayer & Beitz, 1990; Youssef & Goodrich, 1996). Other researchers support these findings in terms of the age demographics. They suggest that “non-traditional nursing” students are highly motivated and bring a breadth of work experience (Wu & Connelly, 1992) and want immediate application of their learning activities to practice (Strayer & Beitz, 1990) which is consistent with assumptions in teaching adult learners (Knowles, 1970). These motivated adults with work experience are the students who are enrolling in online nursing programs (Frith, 2013) and thus innovative approaches are considered to reach these students (Stone & Perumean-Chaney, 2011).

Multimedia Use in Problem-based and Project-Based Online Nursing Education

Problem-based learning (PBL), with its’ origin in the health science fields (Barrows & Tamblyn, 1980), has been historically discussed as a beneficial instructional approach for online nursing education (e.g., Anderson et al., 2015; Anderson & Tredway, 2009; Candela, Carver,

Edmunds, Ralusan, & Tarrant, 2006; Novotny & Wyatt, 2000, Price, 2000; Rounds & Rappaport, 2008) and for teaching other disciplines in higher education and nurses in general (Creedy, Horsfall, & Hand; 1992; Rideout & Carpio, 2001).

PBL places a real world problem at the center of the learning experience immersing students in authentic and meaningful learning experiences (Savery & Duffy, 1995). This learner-centered constructivist approach has been discussed to have the capacity to promote higher-order thinking and encourage collaboration as students formulate their own understanding of the learning material (Good & Brophy, 1991; Jonassen, 1999; Savery & Duffy, 1995). It has been discussed the importance of nurses needing education that engages them in complex critical thinking for preparation in real medical fields (Tompkins, 2001)

Its effectiveness is evidenced in real world practice as the nationally recognized #1 hospital in the country, Mayo Clinic (U.S. News & World Report, 2014), where doctors and interns work collaboratively to diagnose patients with complex issues (observation, September 23 2014) and discussed PBL in context of effective training (Stillman & Hanshaw, 1989; Swanson, 2002). As stated in Anderson et al. (2015), PBL has been defined in different ways (Barrows & Tamblyn, 1980; Davis & Harden, 1999; Rideout & Carpio, 2001; Schmidt, 1983), but there is a general consensus of the essential characteristics of PBL, as follows:

- Students are presented with a problem which is central to the learning experience.
- Students are engaged as stakeholders in the problem.
- Students are immersed in a self-directed learning experience where they have control over and responsibility for their learning.
- Students examine multiple perspectives on a topic, issue, or problem.
- Students interact in small groups to engage in critical thinking and discourse.

- Students reflect on what they have learned and apply new knowledge and understandings to the problem.
- Facilitators coach students through the experience guiding student inquiry.

The literature illustrating the use of project-based learning with online nursing education is limited even though the potential for project-based learning for web-based environments is discussed elsewhere in the literature (Heo, Kim, & Kim, 2010; Kim, Hong, Bonk, & Lim, 2009). Project-based learning pioneered by Kilpatrick in 1918 has many of the same characteristics of PBL, but the central focus of the experience is on a project (Blumenfeld, et al., 1991; Savery, 2006) whereas the Buck Institute for Education (2012) stated, "...rigorous projects are carefully planned, managed, and assessed to help students learn key academic content, practice 21st Century Skills (such as collaboration, communication & critical thinking), and create high-quality, authentic products & presentations" (¶1).

The literature is limited in its discussion of how online RN-BSN nursing students' use multimedia within authentic project-based and problem-based online learning experiences and specifically in regards to the aspects that are most useful to them. However, there are some studies that discuss potential of multimedia for other nursing populations (Garrett & Callear, 2001; Lamont & Brunero, 2014; Maag, 2004; Stillman, Alison, Croker, & Tonkin, 1998). For example, Garrett and Callear (2001) examined the value of interactive multimedia simulations for teaching decision-making skills for nurses in problem-based learning environments, which is supported by others in the nursing field (Fletcher, 1999; Lowdermilk & Fishel, 1991). The authors suggest that the multimedia simulations, videos, and audio can bring to life situations that involve decision-making skills by modeling and offering feedback. They claim that multimedia holds the potential to model necessary skills and also generate higher critical thinking skills, but note the challenges of cost and lack of support to justify using it without

evidence of its value. The article offers an example of an intelligent simulation system that offers individual authentic learning experiences for nurses, but does not examine authenticity specifically for these types of students and demonstrate the value in terms of the learning activities or overall pedagogical design and results may differ with different types of nursing students (nontraditional versus traditional).

In another study, Lamont and Brunero (2014) evaluate an interactive multimedia called eSimulation for generalist nurses in mental health education programs in Sydney, Australia. The authors described the eSimulation program as having five key attributes:

1. creating a hypothetical opportunity;
2. embedded as an authentic representation;
3. supporting active participation;
4. promoting integration; and
5. including repetition, evaluation, and reflection.

The interactive multimedia program was situated around hypothetical cases that the nurses would face in practice. Through a qualitative thematic analysis including semi-structured interviews of fourteen generalist nurses, the author concluded that the following themes (a) control of learning, (b) participation, (c) clinical reasoning, and (d) authenticity reinforced that the five key attributes are well positioned and important with the design of the eSimulation. Specifically, the nurses felt that the simulation was authentic to real practice, which was viewed as a positive aspect to the multimedia. Additionally, the authors reported that the nurses felt that the eSimulation actively engaged them to participate, provided relevant and helpful information, and allowed them to control and self-regulate their learning. As in the previous example, the authors discuss the benefits of eSimulation for healthcare professionals without considerations of

intentions of the designer, the specific culture and values of the generalist nurses in Australia, and the specific role the interactive multimedia holds to mediate their learning.

There has been literature published around the process for developing multimedia for nurses (Oh, Kim, Shin, & Jung, 2004; Ribbons, 1998). However, there is limited discussion of the types of multimedia in context of the online RN-BSN nontraditional nursing culture in online problem-based or project-based learning experiences. There are recommended guidelines for nurses that are frequently published for all populations (Mayer, 2010), but there is no rationale as to why these are beneficial to nurses and are grounded from a cognitive perspective.

Summary of Knowledge Gaps

The multimedia guidelines that are commonly discussed in the literature focus on how learning happens with multimedia from a cognitive perspective. It is assumed that they can be applied in any context with any type of student without consideration of either the particular group of learners or the authentic learning environments and activities in which multimedia is embedded. Specifically, the current discussion in the guidelines focuses on relevance tied to fostering generative processing (Mayer, 2010) and does not appear to take into account different cultures and populations' learning environments. There is an opportunity to build the capacity to support RN-BSN students' within their zones of proximal development with a research focus on the importance of authenticity of the different environments, activities, and tools.

It been demonstrated within online frameworks to situate learning within an authentic context to build meaningful cognitive connections for learning (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990; Cognition and Technology Group at Vanderbilt, 1990; Lave & Wenger, 1991; Schwartz, Lin, Brophy, & Bransford, 1999) which may be motivating from a cognitive standpoint (Moreno & Mayer, 2007), but there is also potential for such technology, like multimedia, to serve as a tool to possibly build relevance to mediate critical

discourse for cultural connections (Lee, 2003). However, there is discussion that such focus should be within the activity systems that the tools are embedded (Kaptelinin & Nardi, 2006). Thus, more studies are needed that formulate guidelines in a real world context that have a long history, like nursing education, situated around how human action, on both the social and individual plans, may be mediated by multimedia from a social and cultural perspective within context of the activities and broader authentic learning environments.

Moreover, the current literature does not discuss authenticity from a variety of perspectives in an online RN-BSN classroom (e.g., the designer, the subject matter expert, the instructors, and the students) with specific interest of the role of multimedia as a potential tool for mediation within different project-based and problem-based designs. Such insights may continue to build an understanding of the environments and cultures in which our activities and tools are embedded. There is a knowledge gap in what is valued with multimedia within authentic activities situated within project-based and problem-based environments.

The literature discussed how multimedia may provide opportunities for learners to engage in social contexts that may help learners build connections (Kafai, 2006), but the current guidelines do not examine the potential of multimedia to provide alternative perspectives for facilitating and supporting public discourse. Multimedia have been used online to bring in alternative perspective to extend believes, values, and perspectives (Anderson & Tredway, 2009; Schwartz et al. 2003). The benefits of integrating multiple perspectives to promote critical discourse are well documented in the literature from both an acquisition view of learning (e.g., Gibson, 2009; Hannafin, Land, & Oliver, 1999; Jonassen, 1999; Schwartz et al. 2003) and participatory view of learning (Kafai, 2006; Lave & Wagner, 1991, Lee, 2003). The principles of sociocultural theory *ZPD*, *scaffolded learning*, *mediation*, *internalization*, *assisted learning activity setting as unit of analysis and distributed intelligence in a learning community*, coupled

with *authenticity* may be used to as potential lens to investigate the potential value of multimedia for online non-traditional RN-BSN nursing students.

Summary of Chapter

This literature review provided an overview of multimedia learning and multimedia guidelines and described the limitations for application to this study with a particular focus on authenticity. It also examined sociocultural perspectives on learning that informed this study and discussed research multimedia learning from a sociocultural perspective. Research examining multimedia within the context of authentic problem-based and project-based learning with specific attention to the online non-traditional student in nursing education is limited. The chapter summarized the knowledge gaps and offered an overview of how a more sociocultural perspective on learning may inform multimedia guidelines.

CHAPTER THREE: METHODS

The study explored specific multimedia that were accessed in two online nursing courses, how they were used, and the benefits and constraints the multimedia offered the nursing students in the context of instructional methods within the broader nursing educational culture. The goal was to provide multimedia guidelines to the administration that could be used for future multimedia development that would be specifically beneficial to the online RN-BSN nursing students. The specific research questions were as follows:

- 1) What multimedia do online non-traditional nursing students use and in what ways to do they use it within the context of online authentic activities?
 - a) How do multimedia artifacts from online problem-based and online project-based courses shape the way non-traditional nursing students define the field compared to other factors such course readings in individual activities and in activities where knowledge is socially distributed?
 - b) What role does multimedia play to assist learning in individual activities and in activities where knowledge is socially distributed in online problem-based and online project-based learning courses?
- 2) What aspects of multimedia are most useful to online nursing students for supporting socially developed artifacts and for application to practice?
 - a) What attributes of the multimedia do designers, instructors, and students believe are most useful?
 - b) How is authenticity articulated by the designer, instructors, and students?

Research Design

This was an action research study aimed to understand the use of multimedia to improve the way that future integration is implemented. The purpose of action research is to bring about

practical change in real world practice (Berg, 2012; Manfra & Bullock, 2014). There are two areas of action research, that of critical action research aimed to influence educational structures and bring social change, and practical action research, which is aimed at improving professional knowledge in real contexts (Manfra & Bullock, 2014; Stringer, 2008). While, this qualitative research design was more on the spectrum of practical action research, it may have the potential to influence how the online program approaches new multimedia development and revisions within the online nursing program and possibly future nursing programs at the university.

The action research approach draws on constructivist inquiry methods to research the conditions for which there are multiple views of reality (Allison & Pomeroy, 2000) that occur within culturally mediated contexts (Cole, 1998). Thus, the proposed research method and framework were purposeful. “Action research” coined by Kurt Lewin in 1944 (Hendricks, 2009; Mills, 2011) is characterized as a participatory method that holds real world implications for practitioners where the researcher engages in the complex dynamics of social contexts to explore a question, issue, or problem (Manfra & Bullock, 2014; Stringer, 2014). Action research is a collaborative approach that encourages participatory reflection to solve real problems (Berg, 2012). The action research design was grounded in systematic inquiry with ongoing reflection, action, and evaluation and was qualitative in nature (Hendricks, 2009).

The administration were interested in the result of this study to inform the university practice. The researcher is actively involved in program and continues to assist administration in making online course and program design decisions. Over time, the researcher has worked closely with the administration of the online programs to analyze, design, implement the courses, and research the program (Anderson & Tredway, 2009; Anderson, Tredway, & Calice, 2015). This study continued this collaborative exploration with the researcher sharing the results with the administration to inform new program and course designs.

History of the Program

In 2007, the researcher was approached by administration officials at a large Midwestern university to be the instructional designer for the RN-BSN online program under study. At that time, the researcher had completed a little over a year of doctoral work in the Instructional System Technology Program at Indiana University. She was a former special educator and had designed several online programs for universities and K12 government agencies over the past decade. Her educational experiences, coupled with her work and teaching experiences, and success of building comprehensive online programs influenced her beliefs of how to design quality online instruction for adult learners.

Specifically, in addition to results seen in practice, her views of learning have been influenced by more social constructivist (e.g., Bransford, Brown, & Cocking, 1999; Brown, 1986; Collins et al., 1989; Lave & Wenger, 1991, Jonassen, 1999; Saye, & Brush, 2002; Savery & Duffy, 1996; Vygotsky, 1981) and sociocultural views of learning (e.g., Bonk & Kim, 1998; Cole & Engestrom, 1993; Danish et al., 2011; Lave, 1996; Tharp & Gillmore, 1988) with a bias towards the latter. Thus, her lens for this study focused on the aspects discussed previously and outlined by Bonk and Cunningham (1998): *ZPD, scaffolded learning, mediation, internalization, assisted learning activity setting as unit of analysis and distributed intelligence in a learning community* with an emphasis of the importance of the *authenticity* of the learning activities and dynamic space.

In Anderson and Tredway (2009), the researcher described the process of working with the instructor who served as the SME to transform one of the courses under study, *NURS 242 Concepts and Processes for Contemporary Nursing*, from a traditional face-to-face lecture design to an authentic problem-based learning online course. The researcher served as the instructional designer. The SME was coming from a more traditional learning perspective where

the instructor is the expert disseminating knowledge of the content which conflicted with the designer's beliefs of designing learner-centered authentic instruction. The researcher asked the SME to trust her one time with curriculum design and if the course results were not up to her expectation in terms of student learning then pedagogical designs used for future courses would be different.

The researcher wanted to build in authenticity for the nurses within the context of the overall learning experience, the activities, and the multimedia. The idea being that the authenticity would assist and support students within their ZPDs within their learning environments (Wells, 1995). She defined authenticity as holding relevance or real-world applications for the learners as in agreement with the definition provided by Jonassen (1999). The researcher believed that the definition of holding relevance or real-world applications for learners would apply to the authenticity of the learning environment, the activities, and the multimedia. This was a broad definition that she applied to all instructional designs. In other words, when designing any online course, she would discuss with the SME the importance of creating a real-world anchor (Bransford et al., 1990) whether it was a problem or a project to ground the learning experience with a specific application to practice. In her view, students were the focus with an emphasis on their environments.

Her views of what constituted as "real world" were influenced by Urie Bronfenbrenner's (1979) ecological systems theory where an individual's world is shaped by those environments that are closest to the individual. She was introduced to this framework when she was an undergraduate special education student taking child psychology in her teacher education program. Over time, the researcher has used the framework within the context of creating authentic learning experiences both for students with disabilities and for adult learners.

The ecological system theory (Bronfenbrenner, 1979) states that there are five systems in which an individual interacts: the individual; the microsystem, or the individual's immediate influences (e.g., self, family, peers, social media, school); the mesosystem or secondary connections between those in the microsystem (e.g., extended family, peers of peers); the ecosystem or those indirect influences in environment that have immediate impact but the individual has little or no control (e.g., education systems, laws, politics in local government, industries); and, macrosystem or the cultural in which the system is embedded (e.g., the RN-BSN education culture). In applying this framework to creating real world experiences, the researcher believed that to create relevance or real-world applications instructional designers should try to stay as close to the individual and the individual's microsystem as possible. This idea has been supported elsewhere in the literature (Cole, 1996). The farther removed an experience becomes from these two environments, the less applicable or authentic it is to the students. Together the researcher and the SME made the determination of what would be authentic to the learners with the multimedia and the learning activities based on their beliefs of authenticity, their past experiences working with this population and with their expertise in instructional design.

The SME and the designer went on to create the second course that is in this study, *NURS 385 Concepts and Processes in Population-Focused Nursing* in a project-based design. A problem-based design was the pedagogical approach chosen because end goal was to have the students have a real opportunity to practice community assessment. This design was easier for the SME to adopt because of the original clinical nature of the face-to-face course and because of the positive experience designing NURS 242. The project submissions served as the authentic assessments in the course. The researcher completed the program design creating an aligned experience between the nine courses that make up the program. The researcher was provided a

budget to conceptualize and produce multimedia for the two courses. The multimedia was designed with authenticity and scaffolding in mind that seemed appropriate to the researcher and the SME based on the design of the courses.

In 2009, the programs were dissolved, but another unit within the university system took over the program administration. During that transition, the administration asked the researcher to continue to support the online programs. The researcher has been involved with program maintenance, instructional design, technical support, and instructor support with all of the department's programs including the RN-BSN online nursing program.

The researcher recognizes she made assumptions regarding the authenticity of the learning, activities, and multimedia in these two based on her prior assumptions about creating authentic instruction for adults. Contrarily, the SME had direct experience in nursing and stated that she felt that she could design authentic learning experiences for this population because, as she pointed out, "I have practice experience in the areas of professional nursing and community health nursing. More specifically, though, the instructors teaching the courses are practitioners in the field so know the most current data, information, and knowledge from the clinical practice arena" (K. Tredway, personal communication; November 11th, 2014). The SME for these two courses also teaches in the program and is in administrator for the program.

At the time of design, the researcher and SME decided what they believed would be an authentic learning experience to the RN-BSN nursing students and there were assumptions made about the value of multimedia create to provide the necessary supports needed to facilitate learning. Although the students do respond favorably to the multimedia and learning activities (Anderson, Tredway, & Calice, 2015), there has not been research that investigates multimedia use within these authentic problem and project-based learning courses and its' value to the nursing students. There are no real-time synchronous components in the program where the

students meet with the instructor for meetings and or lectures. The program is delivered completely asynchronously which has been defined as instruction that allows for a delayed delivery and subsequent consumption of content by the student, and can include discussion boards, online bulletin boards, whiteboards, blog comments, social media commenting and liking features, listservs, and email, to name a few (Johnson, 2006).

There have been minor changes to the courses over time in terms of the language of the instructions but the overall authentic learning experiences, activities, and multimedia have not changed significantly. In the winter of 2015 at the time of research, one change was made to NURS 385 to eliminate team discussions and to hold discussions in large class discussion forums. The decision was made so students would get feedback from more students. Additionally, more specific instructions were added for students to integrate content from the course and readings. Prior to these added instructions, students were expected to add evidence but there was not specific language that they needed to integrate content from the course into their assignments. This will not impact the current analysis of NURS 385 because the classes under study did not have this added information and direction and any students who were interviewed had to already have completed the two courses.

Description of the Program, Courses, and Activities

The online RN-BSN nursing program is offered through a large Midwestern university. It is specially designed for currently licensed nurses to complete their BSN in nursing fully online without any residential requirement. There were only three students the first semester back in 2008, but that that number quickly jumped to about 18-20 students during the first few years (2009-2010). After the program transitioned, the enrollments increased to 25-30 per year. In more recent years (2012-2014), the program has grown to 40-45 students with the Fall 2015 enrollments anticipated to be about 55 students.

The program is made up of nine online courses. This study specifically investigated two of the nine: *NURS 242 Concepts and Processes for Contemporary Nursing* and *NURS 385 Concepts and Processes in Population-Focused Nursing*.

NURS 242 Concepts and Processes for Contemporary Nursing

NURS 242 Concepts and Processes in Contemporary Nursing is an introductory level course for online RN-BSN nursing students. It covers the concepts of adaptation, caring, culture, ethics, law, lifespan, role, and science; and uses the processes of communication, critical thinking, leadership, management, the nursing process, and teaching/learning.

Traditionally with this content, nursing students have trouble understanding what nursing is and what it means to be a nurse. To expose some of these misconceptions, the course immerses students in problem-based experience centered on the students answering the question, “*What is nursing?*” in an online presentation to a mock Board of Directors of the National Student Nursing Association (NSNA). Each online module presents the nursing students with a different challenge that is related to their final presentation. While there is overall online structure provided by the module overviews, goals and materials, challenges, tasks, reflection questions, and module checklists, the students self-direct their learning in each module and determine what resources they utilize in the learning experience. Multimedia is provided to support and extend the perspectives around the challenges and to support the nursing students in their capacity to participate in the challenges and activities. The following section describes the activities that were chosen for this analysis with rationale for selection.

Activities. There were five activities from NURS 242 that were selected for analysis for this study. (1) *Week 1 Individual Definition of Nursing*, (2) *Week 1 Team Definition of Nursing*, (3) *Week 1 Individual Review and Reflect*, (4) *Week 7 Team Final Presentation*, and (5) *Week 7 Individual Review and Reflect*. Table 1 provides a description of each activity.

Table 1. NURS 242 Description of Activities.

<u>Activity Title</u>	<u>Description</u>
Week 1 Individual Definition of Nursing	Each student comes up with their individual definition of nursing after engaging in the readings and multimedia.
Week 1 Team Definition of Nursing	Each student posts his/her individual definitions to the team discussion board and then each team comes up with a team definition of nursing.
Week 1 Individual Review and Reflect	Each student reflects on his/her learning for the first week. The specific questions are provided in Appendix A.
Week 7 Team Final Presentation	Each team member reviews the ideas submitted by each individual team member where they posted 4-6 ideas that they felt should be included in their team's final presentation. The teams must discuss and decide what they will include in their final presentation to the mock board to answer the question, <i>What is nursing?</i>
Week 7 Individual Review and Reflect	Each student reflects on his/her learning for the course. The specific questions are provided in Appendix A.

The reason that these assignments were selected is because they were representative of the characteristics used by Herrington et al. (2004) to describe authentic activities. Table 2 provides examples of how the activities align with these authentic characteristics.

Table 2. NURS 242 Activity Alignment to Authenticity Characteristics.

Characteristics of Authentic Activities	Example
real-world relevance	The concepts of adaptation, culture, caring, ethics, law, lifespan, role and science as they apply to the care of individual families and patients and the processes of communication, critical thinking, leadership, management, science, teaching/learning, and the nursing process are concepts that are essential to practice of nursing.
ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity	They discussed and participated in a number of exercises which challenge them to define nursing; what it is, what it is not, and why it matters.
comprised of complex tasks to be investigated by students over a sustained period of time	The challenge of, <i>What is Nursing?</i> was introduced in the course overview. The course consists of seven weeks, each of which presented a new challenge for the students' National Society for Nursing Advancement team which helped deepen and extend their knowledge for their final presentation in order to answer this question.
provide the opportunity for students to examine the task from different perspectives, using a variety of resources	There were multiple perspectives brought in through interactive content, multiple video perspectives, and a nurse consultant. For example, one module used an actor that played the role of Jake from the NDNA Board of Directors describing why he thinks we have a problem with nursing. Another module had an actress play the role of Marilyn, a long-time nurse and nurse administrator, describing how she feels that nursing is not a profession. Not all the materials provided the perspective that aligned with the nurse. The nurse consultant provided answers to frequently asked questions and challenged them to consider other viewpoints.

Table 2. NURS 242 Activity Alignment to Authenticity Characteristics (cont.).

Characteristics of Authentic Activities	Example
provide the opportunity to collaborate	Throughout this course, the students worked with a small team of fellow classmates who played the role of National Society for Nursing Advancement (NSNA) members.
provide the opportunity to reflect	Each week students had an opportunity to generate initial thoughts based on the questions presented and then after they did individual work, team work, they submitted a final reflection.
can be integrated and applied across different subject areas and lead beyond domain-specific outcomes	Each student had the opportunity to serve as a team leader which presented them with the opportunity for managing a group of classmates in successful completion of that weeks' task. Additionally, students had to create and present a final professional presentation which is an essential communication strand in the field.
seamlessly integrated with assessment	The students' final culminating assessment was their teams' presentation to the NSNA. They were assessed each week on their individual reflections, discussions, and team work around their challenges.
create polished products valuable in their own right rather than as preparation for something else	The final presentation is meant to be for individuals wanting to enter into nursing. It could be used for professional development.
competing solutions and diversity of outcomes	Each team submits a final presentation to the challenge and each includes their unique teams' perspectives.

These authentic characteristics as defined by Herrington et al. (2004).

There were three individual assignments and two team assignments selected. The selection was purposeful because they allowed the researcher to observe how nurses define learning across individual and team specific activities. The first week in NURS 242 the students are provided with course materials that include multimedia artifacts and course readings. They

complete an assignment after they have engaged in the course materials where they individually come up with a definition of nursing. After they turn in their individual definitions, they read each individuals' submission and then come up with a socially developed artifact that defines what is nursing.

NURS 385 Concepts and Processes in Population-Focused Nursing

NURS 385 Concepts and Process in Population-Focused Nursing is an upper-division clinical course that synthesizes theory, research, and practice related to population-focused nursing care. In RN-BSN degrees, this means the course includes an integrative practice experience for three credits. The previous face-to-face version had a clinical component in the field, but the primary delivery of content in the classroom was lecture-based with multi-select assessments. The online course is a project-based design where the students have to complete an assessment of their own community where they diagnose strengths of, plan, implement, and evaluate a health promotion intervention to be used by a Community Health Nurse within their communities. The students communicate and collaborate with a selected Community Health Nurse (CHN) in their community and produce a Health Promotion Project intervention that could be used and implemented.

NURS 385's structure is three projects: Project 1 Community-as-Partner: Assessment; Project 2 Analysis and Diagnosis; and Project 3 Planning, Implementation, and Evaluation. The following section describes the activities that were chosen for this analysis with rationale for selection.

Activities. There were three activities selected for analysis from NURS 385: (1) *Project 3 Team Content Discussion*, (2) *Project 3 Task Planning, Implementation, & Evaluation*, and (3) *Project 3 Individual Review and Reflect*. The activity directions can be found in the Appendix B. Table 3 provides a description of the activities for NURS 385. The activities were selected

because they were representative of the characteristics used by Herrington et al. (2004) to describe authentic activities. Table 4 provides examples of how the activities align with these authentic characteristics.

Table 3. NURS 385 Description of Activities.

<u>Activity Title</u>	<u>Description</u>
Project 3 Team Content Discussion	Each answers the content discussion questions. The discussion questions are related to their individual projects.
Project 3 Task Planning, Implementation, & Evaluation	Each student to this point completed a community assessment and analyzed and diagnosed community concerns and conditions. In this portion of the project, students act on their findings by completing the final steps of the nursing process. They plan a health promotion intervention and develop the materials for implementation and a method for evaluating the outcomes. Students present a copy of all their work from assessment all the way through evaluation for a final presentation for all teams to view and comment on.
Project 3 Individual Review and Reflect	Each student has to identify a local, state, or federal health policy issue and debate and describe the issue, identify if the policy has ethical aspects, cultural aspects or legal aspects, and then talk with their identified Community Health Nurse to see if they have an option on the policy and learn and reflect on their viewpoint.

Table 4. NURS 385 Activity Alignment to Authenticity Characteristics.

Characteristics of Authentic Activities	Example
real-world relevance	This course introduces the students to Public Health Nursing a nursing specialty that stresses the interaction of person, health, and environment and thus is a challenging and, for most nurses, an unusual approach to nursing. They create a health promotion intervention that is completed for a real community or group and are told that their work will have a tremendous impact on their community or an aggregate within it.
ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity	The students actually complete an actual community assessment of their own community; from it, they diagnose strengths and weaknesses for the community; and, from that, they plan, implement, and evaluate a health promotion intervention to be used by a Community Health Nurse within the community to address one of those weaknesses.
comprised of complex tasks to be investigated by students over a sustained period of time	The course is split into 3 projects that expand the duration of the course for their health promotion intervention. They are required to produce these intervention services for a real Community Health Nurse (CHN) in their community.
provide the opportunity for students to examine the task from different perspectives, using a variety of resources	The students communicate and collaborate with their peers throughout the course along with a selected Community Health Nurse (CHN) in their community. They are also provided interactive content that reinforces the main points read in the readings. A project manager nurse audio is included for each project that answers frequently asked questions regarding the project.
provide the opportunity to collaborate	Throughout this course, there are team discussions where students are presented questions anchored to the course readings that they critically think about and discuss.

Table 4. NURS 385 Activity Alignment to Authentic Characteristics (cont.).

Characteristics of Authentic Activities	Example
provide the opportunity to reflect	At the end of each project, students are provided questions about the project and their thinking to review and reflect on and apply it to the nursing practice.
can be integrated and applied across different subject areas and lead beyond domain-specific outcomes seamlessly integrated with assessment	Students have to take on the role of educator as they consider how to present the materials of their health prevention project. Additionally, participating in the interview gets them out into the community practicing leadership and presentation skills.
create polished products valuable in their own right rather than as preparation for something else	Each week they work on their projects and in the end the project is meant to be implemented in their communities.
competing solutions and diversity of outcomes	Each individual's project is unique and focuses on different problems and interventions within their communities.

These authentic characteristics as defined by Herrington et al. (2004).

This project-based course focuses on an individual overall health promotion project. Project 3 is a culmination of the project where they discuss planning, implementation, and evaluation of their projects. The final project was selected to get a comprehensive submission of the parts of their project. For this project module, the nursing students are provided with topic overviews and tool boxes of multimedia and readings for each project. The students complete a team content discussion about their projects, individual project submission where they view and comment on their team member's submissions, and an individual review and reflect. The next section will describe the participants of this study.

The Participants

This study focused on one section of each course and included 16 students in NURS 242 and 20 students in NURS 385. It also included 6 instructor interviews and 5 student interviews. The following sections will detail the populations.

Students. The participants were current online RN-BSN nursing students within a large Midwestern university. Program marketing data from 2008-2014 showed that student ages range from 20 to 69 with an average age of 32. The online RN-BSN students who took classes from 2008-2014 were 86% female and 13% male with 1% not disclosed. Table 5 illustrates the student ethnic distribution data for academic years (AY) 2008-2014. The gender and demographic data in the online RN-BSN nursing program is representative of the demographics in the nursing field (U.S. Department of Health and Human Services, 2012). The average G.P.A of the participants prior to this program was 3.195.

Table 5. RN-BSN Ethnic Distribution Data AY 2008-2014

<u>Ethnic Class</u>	<u>Percentage</u>
Caucasian	56%
Asian	16%
Hispanic	9%
African American	8%
Unknown	5%
Multi-race	4%
International	1%
Native Hawaiian/ Pacific Islander	<1%
American Indian/ Alaska Native	<1%

Student artifacts were downloaded from each section to be analyzed. Specifically, student artifacts were analyzed from one section of NURS 242 that had 16 students who completed the course and one section of NURS 385 that had 20 students who completed the

course. These sections were selected because they were both from the 2014 term and had similar enrollment numbers. There were a total of 157 submissions from the students that were collected from NURS 242 and 303 from NURS 385.

Additionally, a total of eighty-one currently enrolled students were invited to participate in the interviews for this study. These were current students who had completed both NURS 242 and NURS 385. Five students in total scheduled an interview to participate in the study which resulted in a convenience sample of four females and one male (58-32 years old, $m = 45$.)

Instructors. Instructors who were still employed by the university to teach these courses were invited to participate. There were seven instructors that were invited to participate. Out of the seven instructors, six volunteered to participate in the study which resulted in a convenience sample of females (31-69 years old, $m = 50$.) Five of the instructors interviewed were currently teaching during the 2015 spring term and were all adjunct instructors. One of the instructors interviewed was also the SME of the courses. There were two instructors who taught NURS 385 only. One of those instructors had taught it three times prior to the current term and the other instructor taught it five times. There were two instructors who taught NURS 242 only. One of the instructors had taught it four times prior to the current term and the other instructor taught it five times. Finally, there were two instructors who taught both courses. One of the instructors had taught NURS 385 two times and NURS 242 two times and the other instructor was the SME. She taught NURS 242 5 times and had not taught NURS 385 since 2010. She was still asked about both courses given she had written both of them.

Data Sources

In order to address the study research questions, multiple types of data sources were collected. Hendricks (2009) and others (Manfra & Bullock, 2014; Stringer, 2014) support triangulation of multiple data sources in action research to ensure credibility. Hendricks (2009)

classifies data collection strategies for action research into three overarching areas: (1) artifacts, (2) observational data, and (3) inquiry data. This study included all three types of data.

Artifact Data

Hendricks (2009) breaks down artifact data into student-generated, teacher-generated, and archived. This study included student-generated and archived types of artifact data.

According to Hendricks, *student-generated* data include performances, projects, and written assignments. *Archived* data include materials such as course documents, computer-generated report, and documents. The following sections detail the artifact data used.

Student-generated data. The data included student-generated artifacts, both formative assessments including text from the discussion board posts from both classes, reflection assignments from both classes, and summative assessments which comprised of the NURS 385 projects and the NURS 242 final presentation. Both formative and summative assessments are example artifacts for data analysis (Hendricks, 2009). Formative assessments were ongoing throughout the class to measure and monitor progress and effectiveness of instruction, while summative assessments occurred at the end of instruction to measure mastery of outcomes (Popham, 2014). A summary of the student-generated artifacts are reported in Table 6.

Archived data. The data included course assignment directions and prompts, course reading text, and multimedia transcripts for all assignments. The researcher also had the original design documentation for both courses from 2007 and 2008. These were included after the thematic analysis as a source for validation. The reason all readings and multimedia transcripts were included for the entire course is because that material could be referenced in the final week assignments. A summary of the archived data are reported in Table 7 for NURS 242 and in Table 8 for NURS 385.

Table 6. Student-generated Data.

Class	Assignment Title	Number of Artifacts
NURS 242	Week 1 Individual Definition of Nursing	16
	Week 1 Team Definition of Nursing	
	Team A	*65
	Team B	*22
	Team C	*19
	Week 1 Individual Review and Reflect	16
	Week 7 Team Final Presentation	3
	Week 7 Individual Review and Reflect	16
NURS 385	Project 3 Team Content Discussion	
	Team A	*34
	Team B	*48
	Team C	*62
	Team D	*51
	Project 3 Task Planning, Implementation, & Evaluation Final Presentation	*88
Project 3 Individual Review and Reflect	20	
Total Student Artifacts	NURS 242	157
	NURS 385	303

**denotes posts to the discussion board for assignment thread.*

Table 7. Archived Data for NURS 242.

<u>Archived data type</u>	<u>Number of Artifacts</u>
Original Course Design Document	1
Assignment Directions and Prompts	
Week 1	3
Week 7	2
Multimedia Transcripts	
Week 1	11
Week 2	10
Week 3	13
Week 4	4
Week 5	7
Week 6	1
Week 7	2
*Course Readings	
Week 1	10
Week 2	9
Week 3	11
Week 4	8
Week 5	10
Week 6	8
Week 7	0
Total Archived Data	110

***Course readings included websites and eReserves, NURS 242 does not use a textbook.*

Table 8. Archived Data for NURS 385.

<u>Archived data type</u>	<u>Number of Artifacts</u>
Original Course Design Document	1
Assignment Directions and Prompts Project 3	5
Multimedia Transcripts	
Project 1	17
Project 2	9
Project 3	17
*Course Readings	
Project 1 required	26
Project 2 required	7
Project 3 required	8
Project 1 optional	8
Project 2 optional	11
Project 3 optional	0
Total Archived Data	109

*Course readings included websites, eReserves, and textbook readings.

Observational Data

Observational data are used in action research to provide a deeper level of understanding of the research questions (Hendricks, 2009; Stringer, 2014). Video recordings of the interviews were used so that the researcher could observe body language to see if it provided any additional information to inform the research questions.

Inquiry Data

Hendricks (2009) describes inquiry data as being used to, "...gather information from participants about their knowledge, values, beliefs, past experiences, feelings, opinions, attitudes,

or perceptions” (p. 97). This enabled the researcher to triangulate the findings from the artifact collection with inquiry data that included teacher and student interviews.

Interview data. A critical ethnographic method (Carspecken, 1996) was used where the researcher originally created broad lead off questions around topic domains that were based on literature, the research questions, and the initial analysis of student artifacts.

1. *Beliefs about multimedia and its use:* evidence of use in the classes, the types of multimedia they use; multimedia that does not exist in the course that would be beneficial; frequency of use of multimedia compared to other resources, differences between courses and activities types; positive aspects and negative aspects of multimedia.
2. *Learning from multimedia:* types and attributes of multimedia that are most useful to learning, assignments and courses where multimedia makes a difference.
3. *Authenticity:* definitions of authenticity, key attributes of authenticity, importance of authenticity with multimedia and the activities; authentic nature of the multimedia.

An interview guide was created based on the topic domains. Merriam (1998) describes the instructor guide as being the list of questions that are intended to be asked during the interview. The author describes how investigators new to collecting data for interviews will write out the questions ahead of time. It is also discussed how the structure and format will vary given the experience level of the researcher.

The protocol was first reviewed by the original SME of the courses who also serves in administration. Further questions were added based on that initial input and additional input from the research committee members. Anderson, Herr, and Nihlen (2007) suggest the importance of including stakeholders in such decision making to increase the democratic validity, or the extent to which the researcher took into account their perspective. Stringer (2008) describes the balance between incorporating stakeholders’ perspectives while grounding the inquiry to the literature.

Both views were considered in development of the protocol. The SME also participated in the interviews. The results of the SME were going to be kept separate from the other instructors' results, but after the interviews were completed, the SME's answers were so closely aligned to the other instructors' responses that they were not separated out. Audio and video recordings were generated and used from the interviews.

Research Journaling. Another form of inquiry data used was journaling that the researcher performed during the research process as a means of recording observations and thinking during the analysis and interviews. Journaling is a reflective approach often used in action research studies to capture perceptions about the process and data findings, a common practice discussed in action research literature that often provides an additional source of data (Hendricks, 2009; Mantra & Bullock, 2014). The researcher used artifacts such as a Google document, the comment features in NVivo and Word documents, and hand written notes taken during the interview process. These artifacts together provided an additional source for reference.

Procedures

There were two parts to this research study: artifact collection and interviews. The procedures for each are discussed in the following section.

Artifact Collection

The researcher collected artifacts by downloading assignment submission text from the following activities: (1) NURS 242: (a) Week 1 Individual Definition of Nursing, (b) Week 1 Team Definition of Nursing (Team A, Team B, and Team C), (c) Week 1 Individual Review and Reflect, (d) Week 7 Team Final Presentation, (e) Week 7 Individual Review and Reflect; (2) NURS 385: (a) Project 3 Team Content Discussion (Team A, Team B, Team C, and Team D), (b) Project 3 Task Planning, Implementation, & Evaluation Final Presentation, and (c) Project 3 Individual Review and Reflect. There were a total of 157 text submissions that were downloaded

from NURS 242 and 303 text submissions that were downloaded from NURS 385. The purpose of the artifact collection was to determine what multimedia the students were referencing in their assignments, what assignments it was being referenced, and how it was being referenced.

Students' names were recorded in an Excel spreadsheet and assigned a random number. Their names were recorded to ensure that all submissions were collected. The submissions were saved in Word documents titled by the random numbers. Once the researcher confirmed that the number of assignments collected were consistent with the enrollments for that course and were collected for each student, who submitted the assignment, the Excel document was destroyed. In accordance with the IRB approval process, there was no connection between student data that was downloaded from the class and the interviews. In other words, the goal was not to ask students specifically about any assignment or work that they submitted, but to discuss multimedia in general.

After all the student identifiable information was removed from the assignments, which included their names from pages such as the title page and discussion prompts, the files were uploaded into NVivo for analysis. NVivo is a qualitative analysis software for analyzing all forms of unstructured data. For this research study, there were two different NVivo files created: one NVivo file for NURS 242 and one NVivo file for NURS 385. This division was purposeful so that each course could be analyzed separately according to their themes. These files were uploaded to a folder called student submissions for each class. Within each class, the submissions were organized into specific assignment folders and broken out for each team for their team assignments.

After the student submissions were uploaded into NVivo, the researcher uploaded all the assignment transcripts for the assignments under study into a folder called assignment transcripts. Additionally, since the researcher was analyzing multimedia from Week 7 and

Project 3, she downloaded all the multimedia transcripts from the entire course in case references from alternative weeks were made in student submissions. In addition, to gain an understanding of how the course themes were referenced between the course readings and the multimedia, the researcher included all the course readings in the initial analysis. Specifically, all the readings were downloaded from the courses and PDF's were created. Text recognition was used so that NVivo could scan the PDF's during key word queries. Once the readings were ready, they were uploaded into NVivo into a course readings folder in each of the courses in order to prepare for analysis.

Interviews

Recruitment. Student services had access to the email addresses of the students who completed NURS 242 and NURS 385 within the University email system. The administration wanted a staff member other than the researcher to send out the interview participation email. Student services sent out the email to eighty-one of the current students who had completed both NURS 385 and NURS 242. The email was IRB approved and written by the researcher (see Appendix C). The students had to click a link embedded in the email to participate in the research study. The link took them to the University Qualtrics survey software. Students were provided with the approved Research Information and Consent form (see Appendix D). Students were instructed to read the consent form and if they wanted to participate they provided their name, email address, and preferred time for an interview. They had to fill out this information and click a button that said, *Click Continue to indicate your consent to participate*. After a student clicked the button, he/she received a message that the researcher would follow up to schedule an interview.

Only current students were involved in this research study. Two students originally agreed to participate out of the eighty-one students. After a week, the researcher asked student

services to resend out the invitation to participate again. After that email went out, one additional student volunteered to participate. Given the low response, the email was sent out one final time. The email that went out to the students was modified slightly for the final request for participation. Specifically, the following language was added to the email invitation:

We really value you being a part this exciting project to help improve our RN-BSN program. It is your perspective that really helps us understand where we need to make improvements with the multimedia in the courses.

After the final request went out, four additional students volunteered to participate for a total of seven students who submitted the consent form. One of the consent forms only had a physical mailing address provided for the student. The researcher contacted student services to see if they could find the student's email address. There was no current student that was found to live at that address.

There were six students who submitted the consent form and provided contact information which resulted in a convenience sample. The six students were sent an email from the researcher inquiring about times to schedule an interview. Out of those six emails, five students responded to set up a time for an interview. The researcher followed up with the one remaining students three times, but did not get a response to schedule a time for an interview. A time was collectively set with the five students who responded and the interviews were scheduled. The participants were instructed that the interviews would take place in Skype. All of the students connected with the researcher on Skype by providing a Skype IDs. The researcher sent a message to connect through Skype. During the scheduled interview times, the researcher called the participant through Skype.

The processes for recruitment was similar for the instructors. However, one difference was that the administration approved the researcher sending out recruitment emails to the

instructors. All instructors who were currently hired by the University to teach in the program and had taught either NURS 242 or NURS 385 were sent an email to participate in the study. They did not have to be currently teaching the courses because the course multimedia had not changed since the inception of the program.

The IBS approved email written by the researcher was sent out to seven instructors. Four instructors originally agreed to participate out of the seven instructors which resulted in a convenience sample. After a week, the researcher resent out the invitation to participate again. After that second email went out, one additional instructor volunteered to participate. The same email went out a final time and one additional instructor volunteered to participate. There was a total of six instructors who volunteered to participate.

The instructors had to click a link to participate from the email. Like the students, the link took them to the University Qualtrics survey software. Instructors were provided with the approved Research Information and Consent form. The process was slightly different for consenting to agree. The instructors read the form and if they wanted to participate they clicked a button that said, *Click Continue to indicate your consent to participate*. After they clicked the button, they provided their name, email address, and preferred time for an interview. Once they clicked submit again, the instructor's received a message that the researcher would be following up with them to schedule the interview. The process was slightly different because the researcher felt the students may see all the text from the Research Information and Consent form and not participate because they did not see any form to fill out. The researcher did not want the length of the consent document to be a barrier for participation. Both students and instructors still had to click a button to provide their consent to participate.

After instructors volunteered to participate, the researcher followed up with an email inquiring about times to schedule an interview. Collectively, a time was set and the interviews

were scheduled. The instructors were told that the interviews would take place in Skype. The instructors connected with the researcher on Skype either by providing their Skype ID or by asking the researcher for her ID so they could connect with her. During the scheduled interview times, the researcher called the instructors through Skype. The researcher recorded which instructors were participating in an Excel document and gave each of them a letter from the alphabet to protect their identity. The researcher determined how many times since the spring of 2011 that each of them had taught the courses.

Interview Process. Prior to the interviews, the researcher printed out the IRB approved verbal scripts to read to the participants and the interview protocol. The interview process started with the researcher reading the verbal script to the students and instructors (see Appendix E). The script provided the participants an understanding of the purpose of the research and reinforced that their participation was voluntary and described the risks involved. The course references that were read to the instructors were only those that applied to them. For example, if the instructor taught NURS 385 only, then they were only asked about their knowledge of NURS385. The researcher defined multimedia for them as the interactive multimedia, audio, and video recordings found in NURS 242 on the Resources and Perspective pages each week and in NURS 385 in the various toolbox topics depending on which course they taught. The researcher explained that it included the interactive multimedia that students click on to receive more information about a particular topic, the video perspectives in NURS 242, and the nurse consultants in 242 and project manager audio clips in 385. The researcher also defined authentic to them as holding relevance or real world applications to the students.

All participants were given a choice to have an audio recorded of the interview or an audio and video recording. Using Evaer and with the participant's permission, the research was able to record audio only or audio with the video. Once the participant indicated their preference,

the researcher asked them if they had any questions before the interview started. Once the participant indicated they were ready to begin, the researcher started the recording. The researcher told the participant when the interview started recording. All participants agreed to have their video and audio recorded.

The interview process was semi-structured, which according to Merriam (1998) are described as interviews in-between a highly structured interview and unstructured. The interview was a mix of more and less structured questions with some questions resulting from the participant's insights and responses. The researcher used the interview protocol as a guide. The interview protocol was tested with the first instructor interviewed as part of this study. The researcher watched the video to examine interview patterns such as active listening (i.e. reassuring body language and looking attentive and friendly) and non-judgmental and non-threatening paraphrasing (Carspecken, 1996). Responses such as, "Tell me more about that" and "Really?" were used and are paraphrasing examples that have been mentioned by others (Carspecken 2013). The researcher noted how those specific actions appeared to convey interest in a non-judging or threatening way. The interview concluded with the researcher briefly summarizing the main topics and invited questions from the interviewee. The participant summarized her main thoughts and the interview concluded. The researcher thanked the instructor for her participation. The researcher used this first interview to make slight adjustments to the original interview protocol. The final interview protocol for students and instructors are included in Appendix G.

The recordings that were produced from the sessions were renamed with random numbers for the students and alphabet letters created for the instructors. Transcripts were generated for all but one the interviews. There was technical issues with one of the sound files for one of the student recordings. Accurate transcripts were unable to be produced for this

interview, so detailed notes from the interview were used for analysis. Videos of the interviews were re-watched at specific points to capture facial expressions and body language of specific points that were being made in reference to the multimedia.

There were three rounds of interviews for both the students and the instructors. The first round included two instructors and one student interview. The second round included three instructor interviews and one student interview, and the final round included one instructor interview and three student interviews. After the first round of interviews, the transcripts and notes were studied for specific assumptions made by the instructors regarding the students' use of the multimedia and for particular strong beliefs about the attributes of the multimedia. The instructors did not think the students' used the multimedia but the one student discussed how the multimedia was used. The researcher used these insights to build additional questions for the second round of interviews. In between the second round of interviews and the third round of interviews additional analysis was conducted examining the student artifacts and prior transcripts. This constant-comparative approach (Lincoln & Guba, 1985) allowed the researcher to continually examine and compare data throughout the theory building process.

Data Analysis

Analysis was completed through thematic analysis and coding. The following section will describe thematic analysis and an explanation of the coding.

Thematic Analysis

Thematic analysis was performed on the artifacts collected during this study and has been described as an iterative process for building patterns and themes in the collected data (Guest, MacQueen, & Namey, 2012; Shank, 2002). Thematic analysis provides a qualitative account of the data where the researcher studies themes across data sets to understand the broader data corpus (Braun & Clark, 2006). Braun and Clark (2006) describe the approach as, "a method for

identifying, analyzing, and reporting patterns (themes) within data” (p. 6) and go on to say that, “it minimally organizes and describes your data set in (rich) detail” (p. 6). It has been said to be commonly used in nursing research (Ferdeay & Muir-Cochran, 2006; Vasimoradi, Turunen, & Bondas, 2013) where researchers search for and identify the common threads across data sets (DeSantis & Noel Ugarriza).

There are two types of approaches within thematic analysis: inductive analysis where categories are derived from the data text directly and not developed from an existing model or theme and a deductive approach which are theory-driven and look at models or theories to inform the data (Braun & Clark, 2006). The researcher initially used an inductive approach as a means of an exploratory analysis to examine ideas the students expressed in their assignments. Guest et al. (2012) suggest this a common approach with thematic analysis where, “...the researcher carefully, reads, rereads the data looking for keywords, trends, themes or ideas in the data that will help outline the analysis, before any *analysis* takes place” (p. 7). This initial exploration of examination of the student assignments for keywords and themes set the stage for understanding patterns in the data so that themes could be created to answer the research questions.

Once the exploratory analysis of the content was complete, the researcher used a more deductive approach grounded in the literature to examine how the multimedia was used in the courses and also to confirm the value reported by students and instructors. Multiple approaches of inquiry has been used elsewhere in the nursing literature (Ferdeay & Muir-Cochran, 2006). The following were the steps the researcher used for the thematic analysis and were not meant to be necessarily prescriptive but used as a general framework (Patton, 1990; Berg, 2001).

1. Create text of all data to be analyzed.
2. Study textual data for patterns to determine codes for data.

3. Study data codes so pattern and themes can be identified.
4. Examine answers to research questions based on themes.

In this study, the steps were iterative between the analysis of the artifacts and interviews. The iterative nature allowed for the ongoing refinement of the themes and the overall direction of the analysis (Braun & Clark, 2006; Shank, 2002). The analysis occurred while collecting data, which is a common approach where analysis starts with the first document read (Merriam, 1998). The following sections will describe the analysis for this study.

Exploratory Analysis of Content

Create text of all data to be analyzed. Braun and Clark (2006) describes how the researcher should get familiar with the data by transcribing the data and recording ideas at the forefront which is supported by others in the literature (Hendricks, 2009). Berg (2001) suggests that we transform the data into text in order to analyze “social action and human activity” (p. 239). The researcher started with the transcripts with the multimedia as a starting point for understanding the data, which is supported elsewhere in the literature as a first step for analysis with action research (Hendricks, 2009). Braun and Clark (2006) suggest there is no single format for transcripts for thematic analysis. Text for all the student submissions, assignment directions, interviews, and course readings were generated.

Study textual data for patterns to determine codes for data. Transcripts for the multimedia and assignments were already created as part of the instructional design and accessibility of the courses, so the researcher re-read all of them multiple times to re-familiarize herself with the content present in the assignments under study. After the text from the artifacts were loaded into NVivo, the researcher started to read the students’ submissions to become more familiar with what they were reporting. After an initial read of the assignment submissions, the

researcher did an initial keyword query and a more in-depth read of the student assignments under study in both NURS 242 and NURS 385.

Keyword Search. The initial analysis included creating keywords or phrases that appeared in student assignments. First, a text query was performed in NVivo of the student artifacts in NURS 242 (N=157) and in NURS 385 (N=303) to determine what multimedia were being referenced. Queries of text in NURS 242 included: Jake, Rosalinda, Richard, Julie, Marilyn, Julie (video perspective names), multimedia, video, interactive, and topic. Queries in NURS 385 included: project manager, audio, image, toolbox, and multimedia.

There were no returned results for any of the text queries in NURS 385. IN NURS 242, there was only one student artifact where the student referenced a video perspective and another student who referenced an interactive multimedia. As a result, the researcher decided to explore the students' assignments to see what they were referring to and work backwards from there. First, the researcher did more in-depth exploration of student assignments and started with NURS 242 Week 1 Individual Definition of Nursing and read through each student's submission and created keywords from these submissions. She added to these keywords by identifying keywords in Week 1 Review and Reflect, Week 1 Team Definition of Nursing, Week 7 Team Final Presentation, Week 7 Individual Review and Reflect. The process continued for each assignment until saturation was reached and no more additional keywords could be identified. The same process was used with NURS 385 with the Project 3 Team Content Discussion, and the Project 3 Individual Review and Reflect. The final projects were not originally included in the key word search because they were customized to specific communities and the researcher believed they would generate keywords that may not be applicable to the research questions. Again, this process continued for each assignment until saturation was reached.

After the initial keywords were generated for the courses from the students' assignments, the researcher wanted to confirm inter-rater reliability of the accuracy of the keywords. Inter-rater reliability is a measure of the reliability of the data presented (Everitt, 1996). Specifically, it has been referred to as the ratio of variation between the observation score and the true score (Carmines & Zellar, 1979). A colleague familiar with multimedia and conducting research was debriefed on the purpose of the study and was provided a random selection of student submissions from the same assignment pool that the researcher used. Specifically, two assignments from NURS 242 Week 1 Individual Assignment, Week 7 Final Assignment, and the Week 7 Review and Reflect were chosen randomly for a total of 6 assignment submissions in total. For NURS 385, the colleague analyzed 2 team discussions boards from Project 3 Team Content Discussion and 2 assignments from the Project 3 Final Review and Reflection which were chosen at random.

The true agreement rate (TA) was used to measure the proportion of correspondence. The true agreement rate (TA), is a reliability measure of the proportion of correspondence between both interpreters and has been used for qualitative research (Marques & McCall; 2003) and in medical education (Posner, Sampson, Caplan, Ward, & Cheney, 1990). Its calculation has been stated as, " $TA = a / (a+b)$, whereby "a" equals the amount of corresponding themes between both inter-raters and "b" equals the amount of non-corresponding themes" (Marques & McCall, 2003; p. 455). The authors state that a percentage of 66.7% is considered an acceptable TA. The inter-rater reliability of identification keywords for NURS 242 was acceptable ($TA = 82 / (82 + 10) = .89$) as was the reliability of identification of keywords for NURS 385 ($TA = 72 / (72 + 18) = .80$).

After the reliability testing, the researcher created queries in NVivo for both NURS 242 and NURS 385 and searched for where these keywords appeared in student submissions, assignment directions and prompts, course reading text, and multimedia transcripts for all

assignments. It became apparent that the keywords were showing up in student submissions, the course readings, and the multimedia. Thus, the researcher decided to create initial content themes from these keywords so that the keywords could be operationalize to support a more close examination in terms of what multimedia what being used and how it was being used.

The keywords were used to formulate initial themes that appeared in the students' assignments. The researcher believed that if she worked backwards from the students' assignments she could explore what themes were being referenced and how those themes were being referenced. She believed this would provide insight into what type of assignments (individual verses team assignments) had references to the themes and what type of resources (multimedia verses course readings) were being used to support the themes.

Study data codes so pattern and themes can be identified. The researcher held a second session with the same colleague to come up with content themes for both courses based on the keywords for those courses. She provided the colleague a list of the keywords operationalized which is often referred to in thematic analysis as a codebook (Guest et al., 2012). The researcher and the colleague independently examined the list of keywords and categorized them into groupings for themes. The lists of keywords in each of the groupings were compared for agreement. The inter-rater reliability for NURS 242 was acceptable ($TA = 26 / (26 + 2) = .93$) as was the reliability for NURS 385 ($TA = 20 / (20 + 4) = .83$). After they compared their groups of keywords, they each wrote down what they believed to be the theme for each of the groups for each course. The themes were compared and in both cases the overarching ideas were the same for all the keyword groupings. They came to agreement how to name the themes for the study. A list of the finalized keywords, corresponding content themes, and examples from the multimedia after analysis are provided in Table 9 for NURS 242 and

Table 10 for NURS 385.

Table 9. NURS 242 Keywords, Content Themes, and Multimedia Examples

Keywords	Themes	Examples
nursing as a profession profession of nursing goal of a profession nursing professional	Nursing as a Profession	Interactive Multimedia: Help the Nursing Profession? There is room for debate on this issue. It is unclear as to whether nursing theory has helped the profession or not, simply because there are so many of them.
patient relationship client relationship family community patient advocacy building self-reliance/ independence	The Dynamics of Nursing Relationships	Interactive Multimedia: Patient is not able to provide their own self-care (because they are ill or injured). Nursing steps in and provides that care, first completely, then partially, and then only supportively as the patient gets better and better.
art and science the art of nursing the science of nursing nursing process critical thinking/ problem solving knowledge and skill caring	Nursing as a Science and an Art	Perspective Video: Being a nurse practitioner has changed my practice so much that I often find myself reviewing what the art of nursing is and what the science of nursing is.
whole person holistic care focus beyond the illness whole life cycle homeostasis/equilibrium	Holistic Care	Nurse Consultant: Nursing is the practice of caring for people; the whole person not just the patho-physiological disease process. Nurses care for all aspects of the person: physical, psychological, social, spiritual.
patient education educating the patient promotion of health	Promotion of Health through Patient Education	Perspective Video: I see a potential for nurse entrepreneurs to open their own clinics that do everything from hold classes on things like smoking cessation, prenatal care, lead poisoning risk, nutrition, and such; to providing nurse case managers for chronically ill clients and referring sick individuals for medical care.

Table 10. NURS 385 Keywords, Content Themes, and Multimedia Examples

Keywords	Themes	Examples
<p>coordination of care; care management; patient education; education programs; family health; holistic health; health promotion; health care reform.</p>	<p>The Role of Nursing</p>	<p>Project Manager: Because Public Health is undervalued in this country, public health nursing is not well compensated, so, especially in a nursing shortage, it is not unusual to see any RN, regardless of amount and type of education, filling the position of community health nurses and public health nurses, which is really too bad because technical training to do bedside nursing does not at all prepare one for the public health or community health nursing role.</p>
<p>primary health care services; secondary health care services; tertiary health care services; whole community care; prevention; wellness program; disease prevention.</p>	<p>Health Care Responsibility (focus on wellness of whole community to prevent and manage chronic diseases & illness)</p>	<p>Interactive Multimedia: Natural History of Disease—this image is meant to stress the timing, role and importance of primary prevention, secondary prevention, and tertiary prevention. Reading down the columns gives you the associations and timings.</p>
<p>ethnic awareness; cultural competence; ethics; policies; community health issues.</p>	<p>Social Responsibility (awareness of community issues, policies, ethical issues, and ethics & cultural implications)</p>	<p>Project Manager: Self-care is the notion that with a little help, support, and partnering from community health personnel and services, people and communities will gain the ability to care for themselves.</p>

Artifact and Interview Analysis

Coding Round 1. After the themes and operationalized keywords were created, the researcher went back to examine how these themes presented themselves in the multimedia and the course readings in both NURS 242 and NURS 385. Using the list of keywords and themes, the researcher met with the same colleague to discuss the coding for inter-coder reliability purposes. Specifically, they agreed to use the list of keywords and themes as their reference during the coding process. According to Lincoln and Guba (1985) and others (Mouter & Vonk, 2012), 10% of the total content is considered sufficient for inter-coding purposes (Lincoln & Guba, 1985).

For this coding, the unit of analysis or focus of the analysis (Riessman, 2008) was how the themes were present in the multimedia transcripts. Specifically, there were 101 units of meaning identified in all of the multimedia transcripts (N=48) in NURS 242. The researcher and colleague each coded 10 randomly selected units which accounted for 10% of the total units (N=101). Cohen Kappa measure (Cohen, 1960) was used as the reliability measure for given the categorical nature of the data and the fact that it takes into account agreement by chance (Hruschka, Schwartz, St. John, Picone-Decaro, Jenkins, & Carey, 2004). The agreement for coding of the multimedia in NURS 242 (Cohen kappa (N=10) = .74) was acceptable.

In NURS 242, the multimedia transcripts often had more than one unit of meaning included in them, so each unit was coded accordingly. However, in NURS 385 each of the multimedia transcripts fell under 1 content theme. Specifically, there were 20 units of meaning identified in all of the multimedia transcripts (N=43) in NURS 385. The researcher and colleague each coded 5 randomly selected units which accounted for 25% of the total units (N=20). The agreement for coding of the multimedia in NURS 385 (Cohen kappa (N=5) = 1.00) was acceptable.

For the readings, because of length of each reading and the amount of readings that existed in NURS 242 (N=47) and in NURS 385 (N=60) the researcher purposefully selected readings. Specifically, two readings from Week 1 from NURS 242 were selected. The readings were selected for the first week because there were no readings in the last week. A textbook chapter and an opinion paper was selected because they were representative of the types of readings assigned. NURS 242 did not have an assigned textbook, but there were specific chapters put on eReserves for the student. The assigned chapter was the main source of reading for the first week and the opinion paper provided another perspective for the week's topic. The researcher and colleague each coded 24 units in this sample which accounted for 100% of the total units (N=24) in NURS 242. The agreement for coding of the multimedia in NURS 242 (Cohen kappa (N=24) = .85) was acceptable.

For NURS 385, the reading from Project 3 that was selected was the assigned textbook chapter. NURS 385 did have an assigned textbook thus the selection for coding was the textbook. The researcher and colleague each coded 11 randomly selected units in this sample which accounted for 100% of the total units (N=11) in NURS 385. The agreement for coding of the multimedia in NURS 385 (Cohen kappa (N=11) = 1.00) was acceptable.

From this analysis, it became apparent that the themes were present in both the multimedia and the readings. Moreover, this was supported by discussions with the SME because she stated that the design of the multimedia was purposeful in that it highlighted essential points from the readings. As a result, instead of spending additional time coding course readings, the researcher decided to begin coding student artifacts to explore how the themes were being integrated into their answers and what types of resources (multimedia and specific course readings) were being referenced in their artifacts. The researcher believed this would inform her

as to what materials they were using and when they were using it (individual assignments verses team assignments).

Coding Round 2. The researcher and second coder met for another session to code student artifacts. For this coding, the unit of analysis was how the themes were present in the student artifacts. Specifically, there were 270 units of meaning identified in this sample of student artifacts (n=84) out of all of the student artifacts (N=157) in NURS 242. This included six students out of the sixteen students in the class including two teams. Student artifacts were coded until the researcher reached saturation. The researcher and colleague each coded 29 randomly selected units which accounted for 10% of the total units (N=270). The agreement for coding of the multimedia in NURS 242 (Cohen kappa (N=29) = .91) was acceptable.

For NURS 385, there were 56 units of meaning identified in the sample of student artifacts (n=52) out of all of the student artifacts (N=303). This included seven out of the twenty students in the class including one team. Student artifacts were coded until the researcher reached saturation. The researcher and colleague each coded 17 randomly selected units which accounted for 25% of the total units (N=56). The agreement for coding of the multimedia in NURS 385 (Cohen kappa (N=17) = .90) was acceptable.

Coding Round 3. Unlike the first two coding analysis, the round of coding for the interviews was more deductive in nature. Researchers suggest that a deductive approach is useful with analysis when there is an interest to examine theory in alternative situations (Tuckett, 2005; Vaismoradi et al, 2013). It has been stated that, “often the patterns will be known in advance, drawn from the research questions, serving as a template for the analysis. Sometimes, the patterns will emerge unexpectedly from the analysis” (p. Stark, 1995; p. 78). The researcher wanted to examine the patterns in the data as they related to specific sociocultural principles outlined by Bonk and Cunningham (1998) and Herrington et al.’s (2004) framework for

authentic activities. Assisted learning and scaffolding were combined given scaffolding has been provided as an example of assisted learning (Bonk & Cunningham, 1998).

The researcher continuously reviewed the codes and coded them within the framework or organized them into new categories in order to build cohesiveness among the data sets and across the data corpus as the interviews progressed. Patton (1990) described internal homogeneity and external heterogeneity as ways to measure the worth of the categories. Internal homogeneity refers to the data within categories relating to each other in a meaningful way whereas external heterogeneity illustrates clear differences between the categories. Moreover, the researcher noted references that reflected the nursing education culture in which the instructors and students were engaged.

Table 11 shows the finalized framework codes, definitions, and interview examples from the instructors after the data analysis.

The framework codes were used as a guide for the transcript coding. The researcher and colleague met for a final session. For this coding, the unit of analysis was the framework codes. The researcher spent time training the colleague on the framework. The researcher and colleague each coded 42 randomly selected units for the instructor interviews which accounted for 10% of the total units (N=423). The agreement for the instructor interviews (Cohen kappa (N=42) = .83) was acceptable. Additionally, the researcher and colleague each coded 30 randomly selected units for the student interviews which accounted for 10% of the total units (N=308). The agreement for coding of the student interviews (Cohen kappa (N=30) = .79) was acceptable.

Table 11. Framework codes, definitions, and examples from instructor interviews

Code	Definition	Example
<u>Authenticity</u>		
RW	Real World Relevance: References to real world relevance.	-- And I've pointed out, or suggested to . . . , that it also is a platform for nurses to begin to understand their role as a service provider in giving back to the community, and that those kinds of concepts come across in some of the multimedia that we have.
P	Perspectives: References to multimedia and perspectives	-- Because they can hear the divergence, the diversity of opinions of people. So that that helps generate their own thinking of, oh, I thought the only way to think about public policy was, I'll take a stance of being a conservative-- which I'm not.
RF	Reflection: References to multimedia and individual reflection	-- And one of the questions at the beginning of this week is, do you believe nursing is a profession? And I can guarantee you, this student answered yes and told me why. Now, at the end of the week, she's saying, no, it's not. So she got it, right? And she gets it exactly right. It's because she ends with a hopeful comment, right? She says, we can change this and be called the profession in the future. That's exactly the message.
C	Collaboration: References to multimedia and team activities.	--When you hear people with different points of view in a respectful not yelling at each other environment like some of the talk shows, I think that it can be very useful and enlightening for students. That's something that we pick up within the discussions.

Table 11. Framework codes, definitions, and examples from instructor interviews, cont.

Code	Definition	Example
<u>Sociocultural Principles</u> A/S	Assisted Learning/Scaffolding: References to the multimedia providing modeling, coaching, scaffolding and fading, questioning, articulation, exploration, reflection, cognitive task structuring, managing instruction, direct instruction, reinforcement, hinting, simplifying, probing, prompting, guiding, elaborating, and learning support.	--And it really provides them with some solid underpinnings of what they need to have.
I	Internalization: References to multimedia and shaping behavior in context of the social activities.	--And I think the way that the material is presented, the students really use the key concepts as they continue to develop further discussion and further material throughout the week's module.
M	Mediation: References to multimedia in context of supporting thinking or behavior that is centered around an activity.	--Again, you need kind of-- you can't use these in isolation.
<u>Culture</u> NE	Nursing Education Culture: References made in context of the nursing education culture.	--And that's nurses and nursing, in general-- nursing education, in general, is notorious for continuing in the traditional vein of the student sits and listens, and you read, and you produce something.
<u>Other</u> NR	Not Related: Attribute of multimedia may or may not be tangentially related to these principles.	-- And then I would print them out and highlight the stuff that either I want to quote in a discussion or something like that.

Examine answers to research questions based on themes. The thematic analysis continued until a strong theoretical understanding of answers to the research questions emerged. The results are presented in Chapter Four. In Table 12, the data sources and data analysis methods for each research question are provided.

Table 12. Summary of data sources and analysis methods.

Research Questions	Data Source	Data Analysis
1. What multimedia do online non-traditional nursing students use and in what ways to do they use it within the context of online authentic activities?	-- Student-generated artifacts: assignments from NURS 242 section and NURS 385 section	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
	-- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
1a. How do multimedia artifacts from online problem-based and online project-based courses shape the way non-traditional nursing students define the field compared to other factors such course readings in individual activities and in activities where knowledge is socially distributed?	-- Student-generated artifacts: assignments from NURS 242 section and NURS 385 section	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
	-- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)

Table 13. Summary of data sources and analysis methods (cont.).

Research Questions	Data Sources	Data Analysis
1b. What role does multimedia play to assist learning in individual activities and in activities where knowledge is socially distributed in online problem-based and online project-based learning courses?	-- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
2. What aspects of multimedia are most useful to online nursing students for supporting socially developed artifacts and for application to practice?	-- Student-generated artifacts: assignments from NURS 242 section and NURS 385 section -- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002) Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
2a. What attributes of the multimedia do the designer, instructors, and students believe are most useful?	-- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)
2b. How is authenticity articulated by the designer, instructors, and students?	-- Inquiry and observational data: semi-structured interviews with students and teachers (video and audio recordings) (includes researcher journaling)	Thematic Analysis (Braun & Clark, 2006; Shank, 2002)

Establishing Trustworthiness in Action Research

Generalization is not a typical of goal of action research studies; rather the goal is to offer transferability where you can apply the findings in similar contexts with similar results (Bloomberg & Volpe, 2012; Greenwood & Levin, 2007). Transferability becomes challenged when the trustworthiness of the action research study is compromised. Trustworthiness from a

more naturalistic perspective refers to how the researcher's interpretations of the data are credible to those who will use the data (Lincoln & Guba, 1985). Trustworthiness becomes critical to discuss with action research because of the active role the researcher plays in the research process and within the online program.

The researcher in this study openly acknowledges her active role in the research process and was acutely aware of the role subjectivity plays in research and how this could impact the perceived trustworthiness of the study. As Peshkin (1988) stated, "By remaining conventional wisdom, our subjectivity lies inert, unexamined when it counts, that is, beyond our control while actively engaged in the research process" (p. 17). The researcher recognized the need to consciously attend to her own orientations and make the reader aware of them to establish credibility and make clear any orientations that shaped her assumptions and viewpoints.

As a result, the researcher decided to focus on a set of criteria for action research that would illustrate the trustworthiness of this study, as action research studies are often viewed as more rigorous if they focus on those procedures used to ensure unbiased perspectives (Stringer, 2007). Herr and Anderson (2015) suggest that terms such as *quality*, *goodness*, *validity*, *trustworthiness*, *credibility*, and *workability* are often used to describe "good action research" (p. 61). They contend that the goal is to open dialogue between academics and practitioners for assessing the trustworthiness of an action research study by use of a more positive term such as validity (Campbell & Stanley, 1963). Creswell and Miller (2000) note how there is much discussion on appropriate measures for validity in qualitative research but there appears to be agreement that the study should appear credible and others have summarized that the data is measuring what it intended to measure (Guest et al., 2012) which is in alignment with the trustworthiness the researcher of this study established.

The following validity criteria for measuring trustworthiness have been published by authors in previous literature (Anderson et al., 1994; Anderson & Herr, 1999) and discussed elsewhere by others in the action research field (Gall, 2004; Hendricks, 2009; Mills, 2011) were used to frame the discussion of validity in this action research study for assessing the trustworthiness: *dialogic and process validity*, *outcome validity*, *catalytic validity*, *democratic validity*, and *process validity*.

Additionally, the researcher was also aware of the importance of the reliability or consistency of the results of the thematic analysis (Creswell, 2003; Guest et al., 2012). To ensure that the results of the thematic analysis produced consistency, the researcher utilized inter-rater reliability throughout the coding stages in the thematic analysis to account for reliability of the data coding (Everitt, 1996). Specifically, the researcher used following validation and reliability measures that are suggested strategies for action research studies (Hendricks, 2009):

- *inter-rater reliability* to check for consistency throughout the thematic analysis (Everitt, 1996).
- *ongoing presentation and reflection* (Anderson et al., 2007) to make the researcher aware of her potential biases and influences in perceptions;
- *peer debriefing* (Lincoln & Guba, 1985) to discuss the study with a colleague who is not vested in the study or affiliated with the University to provide alternative interpretations in order to point out potential researcher's biases;
- *present results to key audiences* (Anderson et al., 2007) to ascertain the soundness of the research process, conclusions and usefulness from another vantage point other than the researcher;

- *triangulation* (Herr & Anderson, 2015; Lincoln & Guba, 1985) to gather multiple data points to substantiate research findings and conclusions;
- *accurate data recording* (Wolcott, 1994) to provide evidence of how the data was recorded with enough details such as creating transcripts so the data can be accurately represented;
- *member checks* (Lincoln & Guba, 1985) to discuss interpretations of the participants to make sure their viewpoints and actions are accurately communicated;
- *negative case analysis* (Lincoln & Guba, 1985) to analyze data that does not agree with the data to see how they may inform the study;
- *biases are made known* (Herr & Anderson, 2015; Stringer, 2014) to acknowledge the views and assumptions the researcher brings to the action research study to build on the study's trustworthiness;

Table 14 summarizes the validity criterion (Herr & Anderson, 2015) and how it aligns to the validation measures to ensure trustworthiness for this study.

Table 14. Summary of validation measures

Criteria	Focus	Validation measures
Outcome validity	The extent the results inform practice and are useful as action-oriented outcomes.	--Ongoing reflection on how inquiry is informing research questions (includes researcher journaling) --Ongoing presentation and reflection with the stakeholders on how results inform practice (Anderson et al., 2007)
Catalytic validity	The extent the research process and results deepen understandings of the social reality and the call it makes to move those involved towards action, affirmation, or change.	--Ongoing presentation and reflection with the stakeholders on how results inform practice (Anderson et al., 2007)
Democratic validity	The extent the results are relevant to the stakeholders and community under study.	--Ongoing presentation and reflection with the stakeholders on how results inform practice (Anderson et al., 2007)

Table 14. Summary of validation measures (cont.).

Criteria	Focus	Validation Measure
Process validity	The extent the research methodology assists in understanding of the system.	<p>--Triangulation (Herr & Anderson, 2015; Lincoln & Guba, 1985) Multiple data sources (artifacts, student-generated data, inquiry, and observational data) were used</p> <p>--Digitally obtained transcripts of audio and video recordings</p> <p>--Member checks (Lincoln & Guba, 1985) Discuss interpretations of findings with participations to accurately represent their responses</p> <p>--Peer debriefing (Lincoln & Guba, 1985) Multiple meetings with colleagues to review process, progress, and to gather further input</p> <p>--Inter-rater reliability to check for consistency of codes (Everitt, 1996)</p> <p>--Negative case analysis (Lincoln & Guba, 1985) Researcher analyzed negative cases that did not fit within the theme structure.</p> <p>--Biases are made known (Herr & Anderson, 2015; Stringer, 2014)</p>

Moreover, the researcher openly acknowledges her biases and orientation as action researcher in this study (Hendricks, 2009). The researcher provided a description of the history of the program and her involvement in it. Therefore, she has an interest in the value of understanding the uses of the multimedia in the course and the possible differences of uses between course designs. She knows that her past experiences in playing a part in the design and development of the multimedia and courses may influence her to look for the positive aspects of

the uses and benefits. However, that the researcher has a broader interest in the outcomes in this study that go beyond this particular online program. Her company uses multimedia and interactive elements as primary features and selling points of their online platforms. Therefore, while she has a vested interest in the University online program, her interest also goes well beyond this research study, which allows her to situate her perspective not only on the positive aspects that are brought forth through the research, but the critical insights may provide a deeper understanding of multimedia use within a broader online learning context.

Summary of Chapter

This chapter provided the methods for the research study. It described the research design, the history of the program, and provided a description of the program, courses, and activities. The participants were identified along with the data sources. Moreover, it included the procedures for the artifact collection and the thematic analysis. Additionally, the procedures for the interview recruitment and interview process was described, along with an overview of the data analysis with a summary of the data sources and analysis methods. The chapter concluded with how trustworthiness was established in this action research study. The following chapter describes the results of the study.

CHAPTER FOUR: RESULTS

This chapter provides an overview of the environment followed by the findings of this study according to the research questions.

Overview of the Environment

The course formats and multimedia were different between NURS 385 and NURS 242. This is important for understanding the context under study. Specifically, in NURS 385, the students discussed their projects and worked on elements of their project each week. In order to engage in their project and the weekly activities, which includes peer discussion and conversations with an actual community health nurse, they had to understand the concepts and topics that were presented in the readings and reinforced in the multimedia. Within the course there were “toolbox” pages where students are provided multimedia and readings to assist them in their project completion (see Figure 1). Specifically, they are provided with multimedia that includes project managers that are audio only files of an actual nurse talking (see Figure 2), interactive graphics where students rollover to get content (see Figure 3), static flow charts that structured the project tasks (see Figure 4), and interactive project overviews that provided a conceptual overview of the different projects (see Figure 5). The multimedia was closely aligned with sociocultural learning principles, the learning objectives, readings, and learning activities (see Appendix H). The direction prompts referenced use of the readings, but there was no reference to use the multimedia in context of their assignments. At the end of the course, the students had a project that could be implemented and evaluated within an actual community.

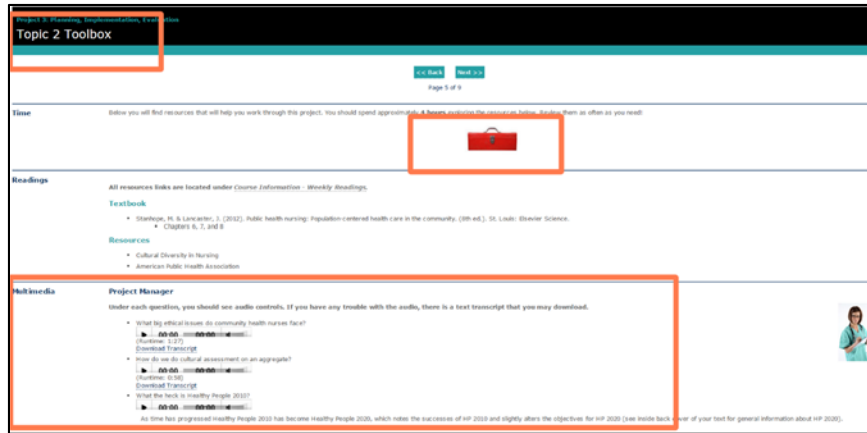


Figure 1. NURS 385 Project 1 Topic Toolbox page where the multimedia was embedded on a toolbox page. Reprinted with permission.

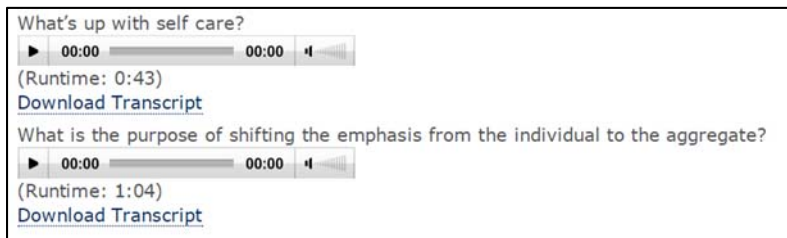


Figure 2. Project Manager Audio Clips in Project 3 of NURS 385. These audio clips have no accompanying illustration and are of an actual nurse's voice. Reprinted with permission.

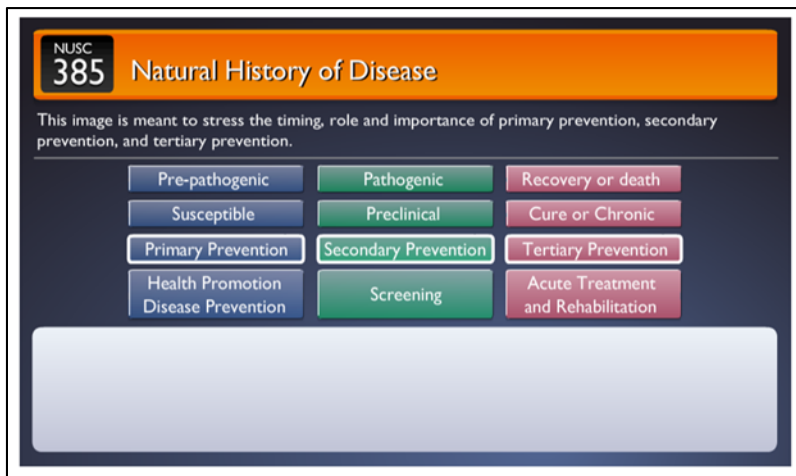


Figure 3. Interactive Multimedia in Project 3 Toolbox of NURS 385 without illustration.

Example of interactive image without graphic of nurse. Reprinted with permission.

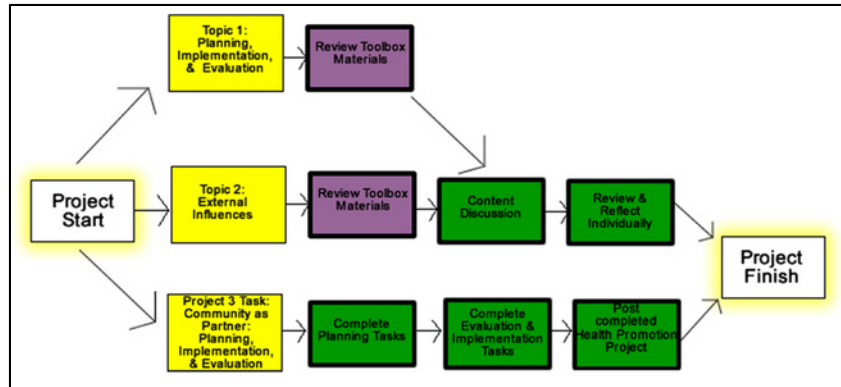


Figure 4. Static Project Flow Charts for Project 3 NURS 385. There was a static project flow chart provided for each project. Reprinted with permission.

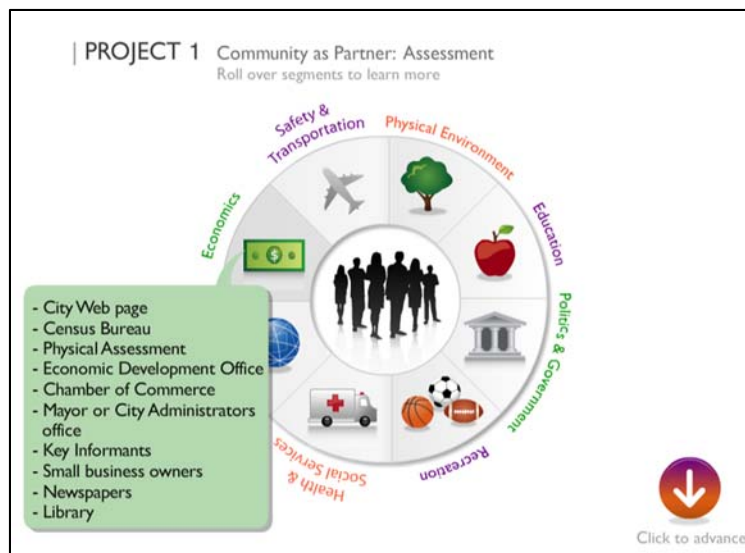


Figure 5. Interactive Project Overview for Project 1 NURS 385. Each project has an accompanying interactive overview. Reprinted with permission.

Given the conceptual nature of NURS 242, students were continuously shaping their understanding of the definition of nursing. The students engaged in different perspectives each week which included internal perspectives provided by multimedia video perspectives of actors that portrayed real nurses in the field (see Figure 6), a “nurse consultant” (animated illustration of a nurse. see Figure 7), and interactive graphics that are provided as resource material from the person of the video perspective address where students rollover them to get content (see Figure

8). Additional perspectives were provided beyond the multimedia through course readings, the instructor, and the team members. The multimedia was provided on a page called “perspectives and resources” (see Figure 9). Like NURS 385, the multimedia was closely aligned with sociocultural learning principles, the learning objectives, readings, and learning activities (See Appendix I). The direction prompts referenced use of the readings, but there was only one reference to use the multimedia in context of their assignments and it was an interactive multimedia. At the end of the course, the students provided a definition of nursing for a mock board of directors.



Figure 6. Jake’s Perspective Address Video in Week 1 of NURS 242. Jake was an actor which the students were told in the course overview. Reprinted with permission.



Figure 7. Typical animated nurse consultant multimedia in Week 1 of NURS 242. Her voice was an actual female human voice. Illustrations in each course were the same but varied between courses that used this multimedia type. Reprinted with permission.

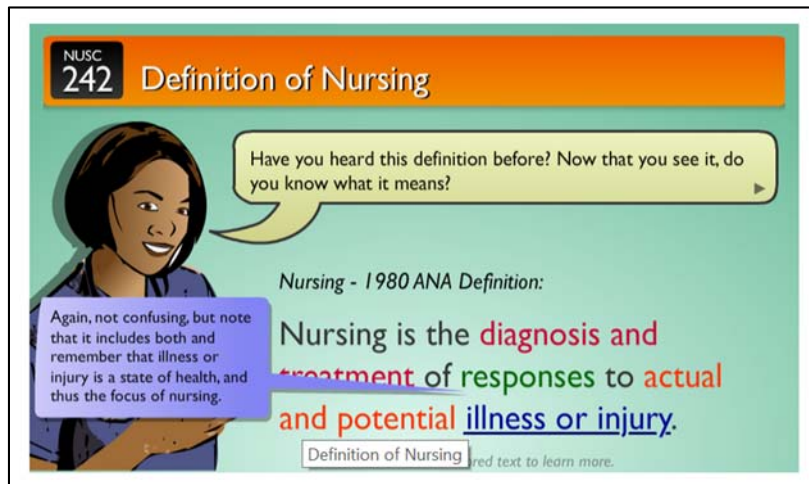


Figure 8. Jake's supporting Material in Week 1 of NURS 242 with illustrations. Students clicked on the graphic and content pops up. Some had graphics and some did not. Reprinted with permission.

The screenshot shows a course page titled "Week 1: What is Nursing? Resources and Perspectives". It includes a video player for "Jake's Perspective" and a "Multimedia" section with the following items:

- Jake's Inspiring Materials
 - Topic 1: Philosophy of Nursing
 - Topic 2: Definition of Nursing
 - Topic 3: Types of Knowledge
 - Topic 4: Nursing Theory
- Online Nurse Consultant
 - Why do we need to define nursing?
 - What is the importance of nursing? *any reference to a textbook should be interpreted to mean required weekly readings
 - Nursing: what is it not?
 - Do we need to know the story of nursing?
 - Do we need any nursing theories?
 - What is the IOM Report, Future of Nursing: Leading Change, Advancing Health?

Figure 9. NURS 242 Week 1 Resources and Perspectives page where the multimedia was embedded. Reprinted with permission.

Research Question Findings

Research Question 1: What multimedia do online non-traditional nursing students use and in what ways to do they use it within the context of online authentic activities? As stated previously, authentic activities has been defined for this study as those activities that result in application and integration of knowledge in real world tasks (Herrington & Oliver, 2000). Instructors had different perceptions of multimedia use in the authentic activities between course designs. For example, all of the instructors who taught NURS 242 felt there was evidence that multimedia was used. As one instructor stated, “And they often cite the nurse consultant or the video. They'll say Jake, or Marilyn, or-- I can't remember some of the other names.” Contrarily, all of the instructors who taught NURS 385 were less convinced that students’ used the multimedia. As one instructor stated, “There's only been one person that's used any of those

[multimedia] in their assignments. All of it would be useful if they would use it.” Additionally, instructors who taught both NURS 242 and NURS 385 had mixed views as to whether students used the multimedia. One instructor stated, “I think there is clear evidence that students do use them, that they refer to them. They want to reference them. And there's clear evidence that some students don't use it.” As the other instructor said, “I don't know how to-- just, how much is it [the multimedia] is being used.” In fact this instructor even indicated that she felt they used in more in NURS 242. In her words, “I think they use [multimedia] more in 242. I know there's never a time that I teach it that they don't talk about Marilyn by name.”

The instructors' views that the multimedia is not generally cited were supported during the initial query, where searching for the multimedia specifically did not provide strong evidence of students using the multimedia. Moreover, students did not cite multimedia specifically in their assignments so it was difficult to determine if the content they used in their assignments came from the readings or the multimedia. There were three overarching points that the students made for the reasons the multimedia was not cited specifically: lack of knowledge, lack of time/effort, and instructor expectations. Four of the students claimed they do not cite multimedia specifically because they did not know how to cite them. They made comments such as, “I would say it's because they [the students] don't know how to cite it.” Three students mentioned not having enough time to go back to cite it. One student specifically mentioned the process of citing being laborious. In her words, “But I wonder if part of it is just, it was kind of laborious to go back and remember how to cite the multimedia stuff. To find that information.” Another student brought forth the aspect of being lazy. In the student's words, “it was a little bit of laziness.” Finally, two of the students discussed how the instructor's expectations impacted them not citing the multimedia. As the one student stated, “I didn't

include them in my assignments because the instructor's viewpoints as to what you should use to cite is different. Don't want to lose points.”

Nonetheless, despite the fact that students did not generally cite the multimedia in their assignments, themes from student artifacts in NURS 242 and NURS 385 were also coded in the multimedia. For example, a comparison of the distributions of the themes in the student artifacts to those in the multimedia illustrated how the student artifacts also covered the themes that were in the multimedia. Figure 10 illustrates the distribution of the 101 units of meaning of the themes identified in the sample of multimedia transcripts (N=48) in NURS 242 across all the multimedia and Figure 11 illustrates the distribution of the 270 units of meaning of the themes identified in the sample of student artifacts (n=84) in NURS 242 in the Week 1 and Week 7 assignments. Additionally, Figure 12 illustrates the distribution of the 20 units of meaning of the themes identified in the sample of multimedia transcripts (n=43) in NURS 385 across all the multimedia and Figure 13 illustrates the distribution of the 56 units of meaning of the themes identified in the sample of student artifacts (n=52) in NURS 385 across Project 3 student assignments.

While the themes appeared to be present in students' artifacts and the multimedia, instructors reported concern if the students used the actual multimedia. They believed that students just downloaded and printed the transcripts instead of actually using the multimedia medium. As one instructor questioned, “OK, is that they don't even access the video of Jake or access the interactive Flash or the nurse consultant audio and video? They simply go to the transcripts page and print all the transcript.” Other instructors admitted that they encourage the students to print and read the transcripts. As this instructor stated, “And I have made a note to them in the announcements this week, because it's the first week of the course, that they can choose to look at the videos and use the audio, or they can print out the transcripts.”

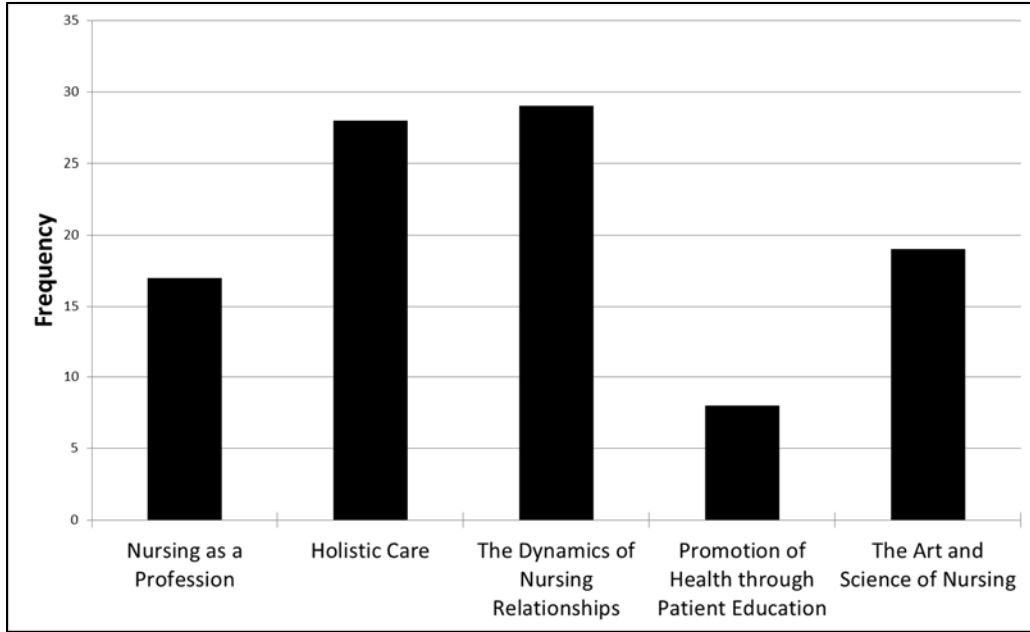


Figure 10. Distribution of themes across NURS 242 multimedia.

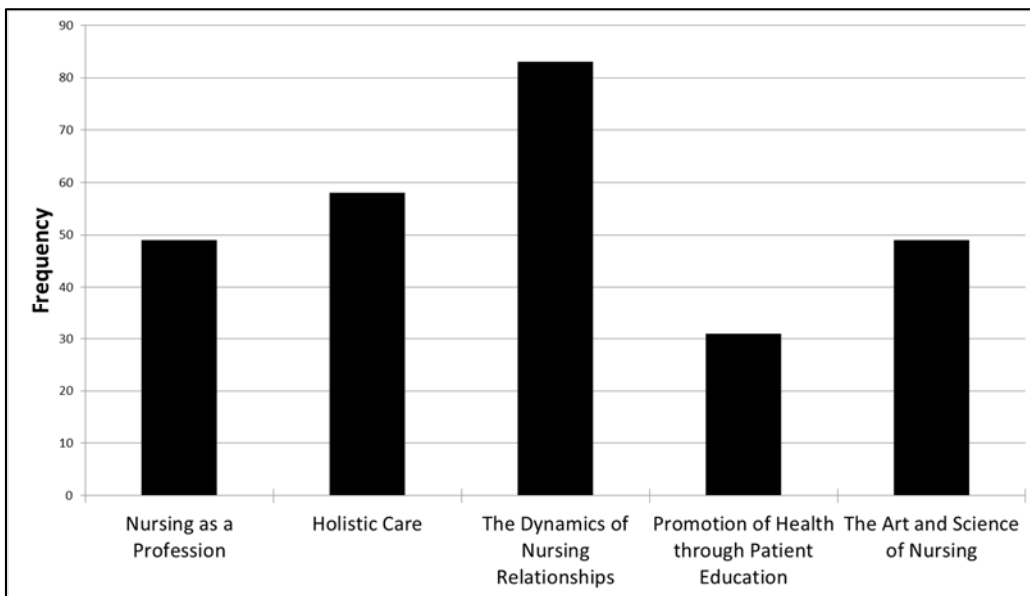


Figure 11. Distribution of themes across NURS 242 student artifacts.

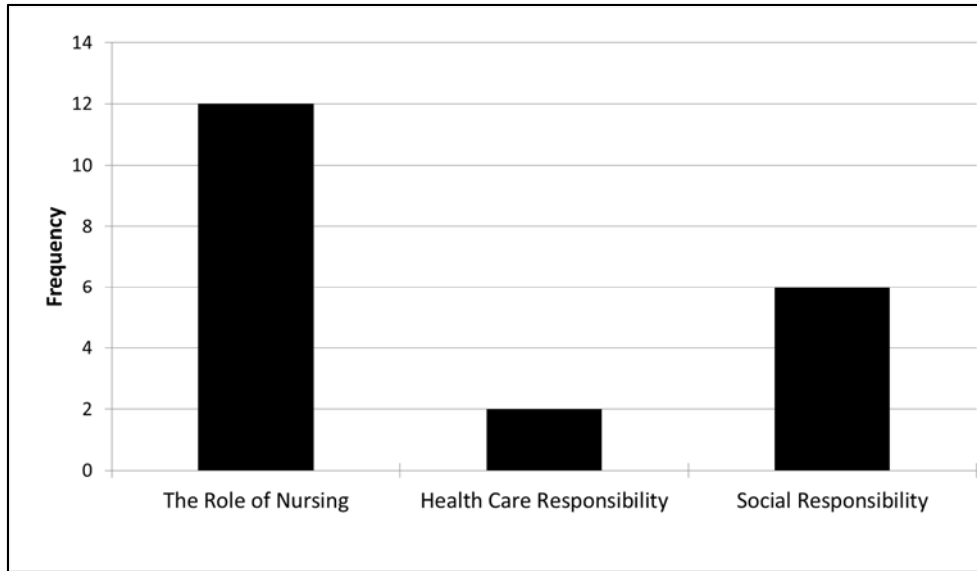


Figure 12. Distribution of themes across NURS 385 multimedia.

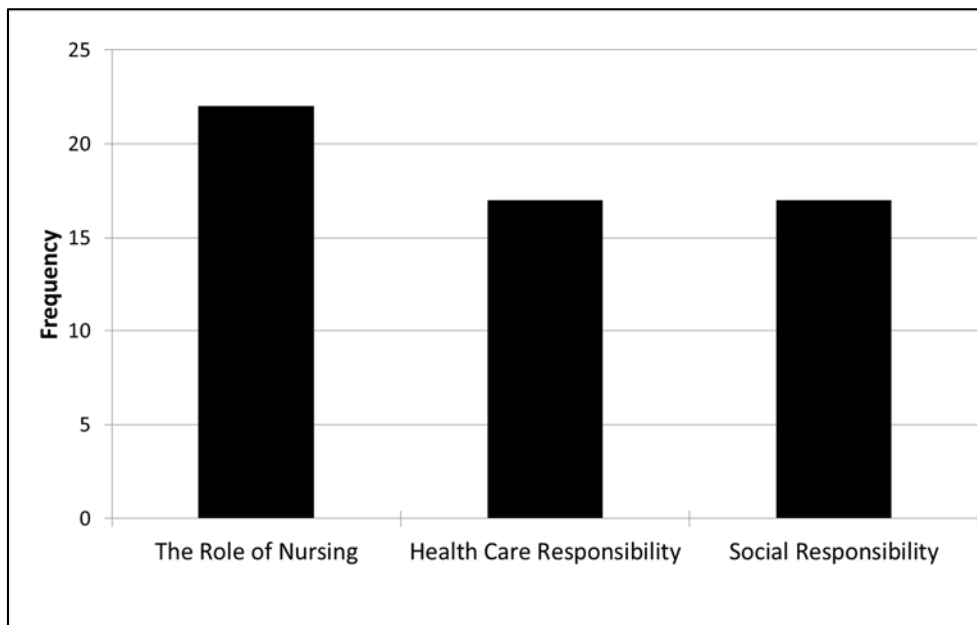


Figure 13. Distribution of themes across NURS 385 student artifacts.

Also, there were instructors who encouraged students to cite the readings but not the multimedia. As one instructor stated, “And referencing these irritates the heck out of me, and they should not be allowed to reference that” and she ultimately took off points for student using them. As she stated, “I was giving them poor grades, and I was saying it really straightforwardly,

that I'm not seeing anything from the readings.” Some instructors did not see the multimedia as being scholarly.

Given it was not clear if the students used the multimedia, the researcher asked the students directly if they used the multimedia in the courses. All of the students interviewed (N=5) were emphatic in their responses that they did use all of the multimedia in both NURS 242 and NURS 385. There was not one type of multimedia that was not used. In addition, the students reported using the multimedia medium rather than just printing the content of the multimedia. Further, when asked about how they would feel if the multimedia were removed from the courses, the students reacted negatively to the notion of removing them. They found value in the multimedia medium and did not want it eliminated. These responses are representative of their feelings:

- “I think it would be a mistake to just provide the transcript, because essentially, what you're doing is just putting the textbook information on the screen.”
- “I used the transcripts to reinforce points, but don't take away the multimedia. It helps reinforce the main points in a quick and easy way.”

Students expressed their concern with eliminating the multimedia at multiple points during the interview. As one student stated, “I am shocked that they would even consider taking away the multimedia. This is a great program and the multimedia plays a role in that it reinforces what I am learning. I can go back and review those after the course.” Another student added, “If you take out the multimedia, I'd be failing.”

The ways in which multimedia was used in context of their activities verses transcripts seemed to be dependent on the following themes: *time/convenience*, *assistance for learning*, and *citations*. First, students reported they may use a transcript or a multimedia depending on time

and convenience for the situation they are in. For example, one student said, “When I printed out the transcripts, I had it right there. So if I had to take my kids somewhere, and I knew I was going to have to sit, I could shove it in a folder and take it with me, and read through it.” At the same time, the value of the multimedia medium was pointed out. As this student continued explaining, “But at the same time I'm reading through it, I'm also, in my mind, picturing the graphics.” Moreover, the value of time of the non-traditional RN-BSN student was reiterated. The following representative statements illustrate that time was an issue for the RN-BSN students:

- “I got the impression from my classmates that many of them worked full time, had families”
- “I think I went two and a half days with only like a couple hours nap because I was just-- I was still working full time. I had a pretty high stress position. So there was just so much detail that went into this class [NURS 385]. It was easy to get overwhelmed.”

Second, all students claimed that they may use a transcript or a multimedia to assist their learning. As one student stated, “I don't know if I've got some kind of audio memory problem or what. I do have to-- It always helps me to hear and read and see.” However, students claimed how the transcripts do not take away from the multimedia: One student said, “I used the transcripts to reinforce points, but don't take away the multimedia. It helps reinforce the main points in a quick and easy way.”

Third, students reported that they may print out content of the multimedia so they can accurately provide citations. Multiple students mentioned the pressure of having to make sure you get references exactly correct. As one student stated, “Because you don't want to get

anything wrong. That's pretty highly stressed in the program, is making sure you're accurate....”

While the students reported they use the multimedia, there appeared to be differences in how students used them between NURS 242, which was the problem-based course, and NURS 385, which was the project-based course. This difference was illustrated by the student interviews and artifacts. For example, during the interviews the researcher shared screens to refresh the students’ memory of the multimedia. As the researcher was bringing up NURS 242, she asked the students if they remembered a time they used multimedia. Without a prompt, all of the students recalled the video perspectives. They discussed how it provided them with a real perspective from an actual person: The following are represented statements from the students:

- “Jake puts you in a nursing paradigm. It provides you a perspective that is real.”
- “I think it was-- the real actors each told their own story if I remember right.

Like I am so and so, and this is my experience. I just really like the ones with the real people quite a lot.”

As the researcher brought up the multimedia in NURS 242, one student responded, “Yeah, I remember that class [laughing].” She discussed how the class changed her judgment of the nursing profession and how the multimedia video perspectives played a part in her learning. The student discussed it supported her learning in these words:

Because he's kind of like an insider. He's in the field. He works somewhere, and he speaks from his perspective, how he sees it, and what he's living. And I'm kind of like a student listening to him, although I work somewhere. But I learned a lot because depending on the setting where you work, you're not exposed to some-- there are some experiences you're not exposed to.

The video perspectives appeared to have left an impression on the students in NURS 242. For example, when the researcher brought up the video perspectives specifically, students expressed dissonance with Marilyn even though the researcher did not play or show the video to

her. Marilyn was a video perspective in Week 2 that provided the perspective that nursing is *not* a profession. As this one student expressed, “the only one I had a problem with was the older woman that talked about being a professional.” She described why the video perspective bothered her, “Her face looked like she was on a rampage or something, like she just had to be stern about what she was saying, like she was expecting to be obnoxious.” Marilyn was the most referenced multimedia in NURS 242 by name by the students in the interviews.

In their artifacts, the nursing students referenced the theme, *Nursing as a Profession*, the most out of any other theme in their Individual Review and Reflection Assignments. Figure 14 illustrates the distribution of the 84 units of meaning of the themes identified in the Week 1 and Week 7 Individual Review and Reflection Assignments out of the sample of student artifacts (n=84) in NURS 242. While all the themes were present in the video perspectives (See Figure 15), the theme, *Nursing as a Profession*, in particular was stressed in all of the video perspectives except Week 4 Rosalinda. Marilyn was the video in Week 2 that provided her controversial view on the profession of nursing.

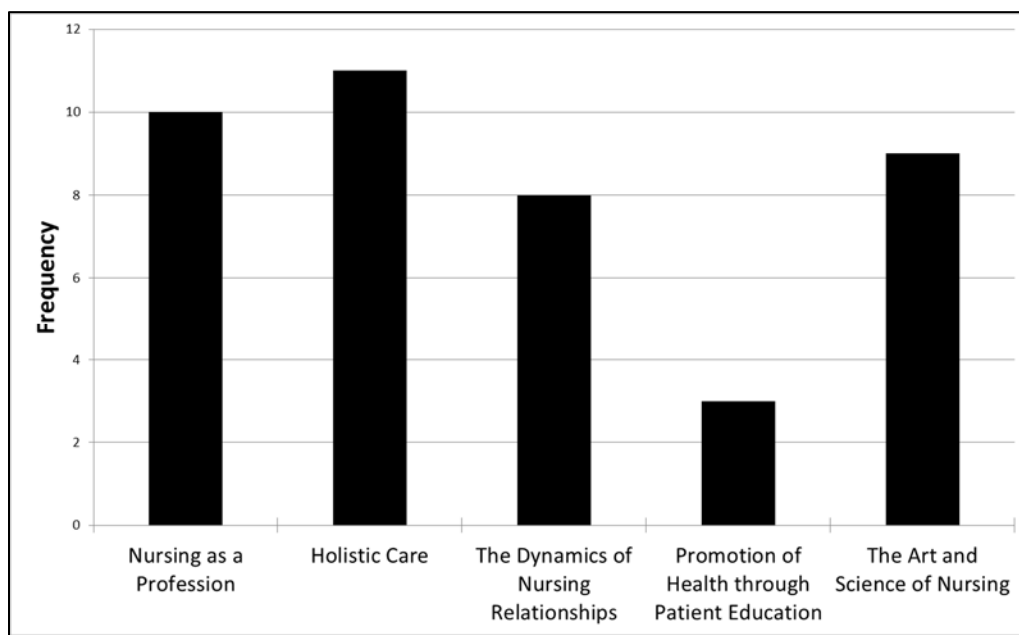


Figure 14. Distribution of themes across NURS 242 perspective videos.

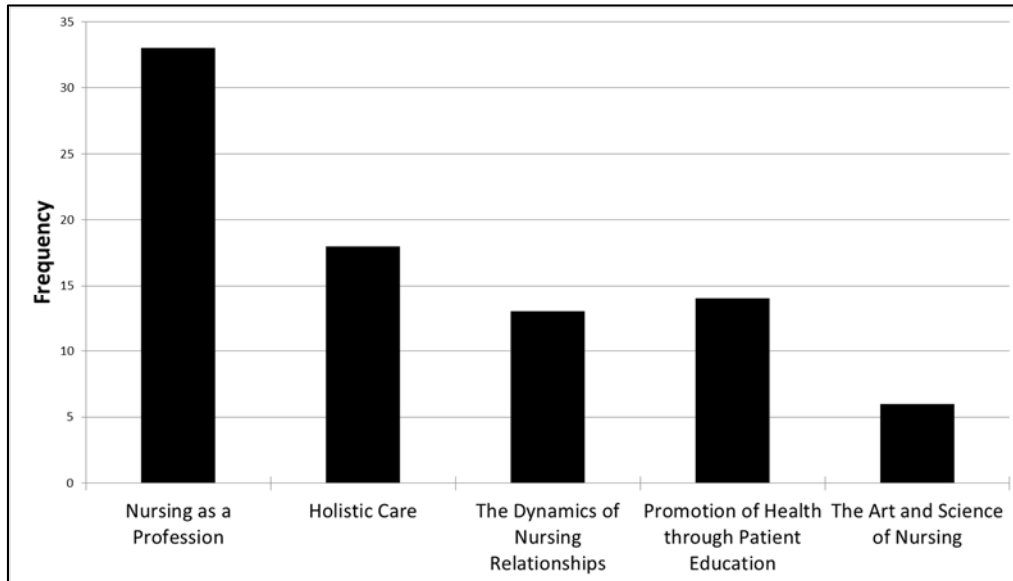


Figure 15. Distribution of themes across NURS 242 Week 1 and Week 7 Individual Review and Reflect Assignments.

Additionally, during the thematic analysis it appeared that the theme, *Nursing as a Profession*, was present in their reflection assignments and by Week 7 students' thinking may have been challenged. Additionally, the way students referenced the theme appeared to take on similar tones as the multimedia rather than using the technical language from the readings. To illustrate, excerpts of the students' reflections are included for two students out of the sixteen students in NURS 242 for Week 1 and Week 7 with the themes of *Nursing as a Profession* highlighted.

Student A: Week 1 Review and Reflect: I was surprised to find out that there is such a push to develop a definition. When I think of most professions, I don't think of their definitions. I'm not even sure if they have a definition. When I was in funeral service, there was no clear cut definition. It was similar to nursing in that there were definitions of the various tasks but not an overall definition. There was a lot of gray area. Because like nursing, it is a profession of undertaking lots of tasks. I'm not sure a definition is going to help us.

Student A: Week 7 Review and Reflect: What surprised me about this course was how nursing is divided into art versus science. I hadn't even thought of it before. Nursing was just nursing to me. I hadn't thought about this part is part of

the science of nursing and this is part of the art of nursing. What frustrated me was finding out that **what I thought I worked in was a profession, wasn't really a profession.** We go through all this training, education, regulation, and licensure, not to mention the cost to attain, and we're not a profession. There are professional ball players, but nurses aren't professionals. We're supposed to act professionally, but we're really not professionals, since our trade is not considered a profession. It really puts a thorn in your side.

Student B: Week 1 Review and Reflect: I think it is important to have a definition of nursing. We have to be able to define who we are and how we are different from other medical professions. **Without a definition, I fear that there will be confusion as to the expectations of the profession and conflicts between nursing and medical science.** It is, however, important to emphasize that a definition is not the same as scope of practice.

Student B: Week 7 Review and Reflect I thoroughly enjoyed the topics in this course. I think that every nurse should take this course in order to understand that our **roles in nursing is much more important than most think and how important it is, as nurses, to be able to define who we are.** I was really surprised how frustrated I got over certain topics in this course, particularly '**nursing as a profession**' and 'entry into practice.

While the video perspectives in NURS 242 appeared to have left an impression and may have been one contributing factor in challenging the students thinking, the discussions with the students and the analysis of the artifacts in NURS 385 illustrated a difference in how multimedia was used in the project-based course. Instead of being a contributing factor in possibly challenging students' thinking, the multimedia appeared to be used as a tool to support their thinking and assist them in the completion of their projects.

Unlike NURS 242, when the researcher initially asked the students about an example of use of multimedia in NURS 385, four out of the five students could not recall how they used it without a prompt. There was a common theme of not remembering the multimedia specifically, but the students remembered that this class required a great deal of effort. It was common for students to respond with comments such as, "It was a very difficult class. And there was a lot going on all the time" or "I think 385 was the one that I was closest to a true mental breakdown". They also remembered the multimedia in context of helping them complete their projects. For

example, one student discussed the benefit of the static project flow charts and the interactive project overviews. She stated, “So that one [interactive project overview] helped me to pick which direction I was going with that. It made my choice a little less random because I had to pick the two most important ones.” The other students stated that they used the multimedia and that it helped them complete their assignments. In one student’s words, “I didn’t really use the multimedia all the time because there wasn’t enough time to listen to all of them. But the ones that helped me build the project, I was sure to listen to.” Another student claimed, “I know that when you roll over these, it's going to give me more information. It's useful to me because I can go back and look at it as I'm doing my reading or projects.”

Their claims of use was supported with evidence from their Project 3 Reflection assignment. While there were no video perspectives in NURS 385, the project managers and interactive multimedia could have been one contributing factor in supporting the students’ thinking. As Figure 13 showed, the theme of the *Role of Nursing* was coded in the multimedia. That theme was also the most referenced in their Project 3 Individual Review and Reflect Assignment. Figure 16 illustrates the distribution of the 42 units of meaning of the themes identified in the Project 3 Individual Review and Reflect assignments across all multimedia units of meaning (N=56) in NURS 385.

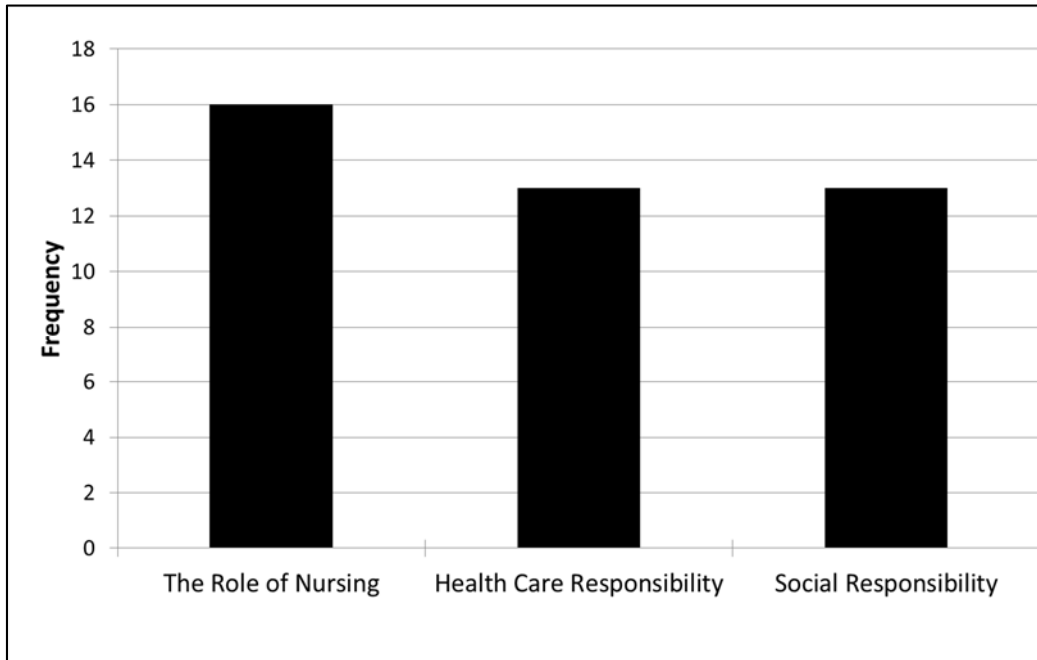


Figure 16. Distribution of themes across NURS 385 Project 3 Individual Review and Reflect.

Like NURS 242, the way students referenced the themes in their assignments appeared to take on similar tones as the multimedia rather than using the technical language from the readings. Representative examples from two of the twenty students' reflections around the theme of the *Role of Nursing* included the following:

- “The National Association of School Nurse (NASN) advocates for the above bill to be passed as they recognize that a school nurse’s role is critical.”
- “According to my CHN, she has chosen to take steps within her own Parish and sister Parish’s to educate, advise, coordinate programs (focusing on wellness and prevention), be a health counselor, volunteer and support group coordinator, community liaison, and role model for the relationship between one's faith and one's health.”

Summary

Despite instructors' concern of students not using the multimedia and/or just using the transcripts, there was evidence that students do use the multimedia in NURS 242 and in NURS 385 even though they did not cite it. Given the course designs, it appeared that how the multimedia was used in context of the online activities in NURS 242 differed when compared to how students used the multimedia when they were focusing on a project as in NURS 385. Specifically, the students' thinking appeared to be challenged and changed in NURS 242 whereas, in NURS 385, the multimedia appeared to assist them in understanding concepts in context of their projects and supporting project completion.

Research Question 1a: How do multimedia artifacts from online problem-based and online project-based courses shape the way non-traditional nursing students define the field compared to other factors such course readings in individual activities and in activities where knowledge is socially distributed? All of the instructors and students discussed how the multimedia assisted their learning compared to the readings when completing assignments. In fact, 26% (n=11) of units coded (N=43) in the interviews fell under the category of *assisted learning/scaffolding*. The instructors discussed in the interviews how the multimedia focused students' learning on essential points in order to support them in the assignments. From their perspective, the multimedia provided students with a more directive support in ill-structured problem-based and project-based environments. Comments representing this included:

- "...the multimedia approach allowed them to find those key points of information."
- "So when students couldn't answer, what does this definition mean, we've created it into that multimedia Flash."
- "So it highlights it."

- “Multimedia has the added bonus siphoning for them, really narrowing to the point.”

In addition to the directive supports in NURS 242, the instructors pointed out that another way multimedia shaped students’ learning was that it provided a more divergent type of support over the course readings in the problem-based course. The video perspectives were specifically mentioned. As one instructor stated, “It’s not until they listen to Jake that he says that, too. So they connect with Jake. He says, we’ve got a problem here.” The videos were mentioned to challenge students’ thinking over the course readings. This statement from one of the instructors illustrates this point:

So I think I think in 242, since it’s a concepts and theories course and it’s a challenge course-- it’s challenging their thinking-- that’s not going to happen if we just send them to read some dry material. There has to be some animated discussion of this, animated either in the life form of a person or a picture or something is my perspective.

The students reinforced the instructors’ viewpoints that multimedia assisted their learning over the course readings in the courses. While the instructors’ mentioned the video perspectives challenging students’ thinking in NURS 242, students reported them more as a directive support. As one student commented, “I think it [the video perspective] was more reinforcement.” Other students reinforced this claim, “This is a great program and the multimedia plays a role in that it reinforces what I am learning. I can go back and review those multimedia after the course.” One student recalled the script almost verbatim of the Jake perspective video as she described how it shaped her learning over the readings by providing reinforcement. However, it appears that it may have shaped it by the questions it posed.

This guy... I remember, it was during the first week. And the person speaking on the video was saying, people put their life in your hands. You are the heart of the

hospital. If there's no nurses, then nobody's going to come to the hospital. And sometimes you don't value your profession enough. And you can talk to people about what you do, if you don't know what you're doing, then they're not going to know it. So you should be able to define what you're doing and be able to tell them what nursing is about. And if we're not able to, then we don't exist. So some kind of example and a way to put the way to define or present a topic would kind of start the discussion in my head.

While students discussed the multimedia in general as assisting their learning in NURS 242, in NURS 385 specifically they discussed how it supported them in project completion. For example, one student talked in length how multimedia focused on the essential points in a way that prevented her from being overwhelmed. In her words, “So there's so much that you're assigned to read, going through multimedia helps to give you a signpost of what you're going to be looking at and what things you should specifically pay attention to.” For the students, the multimedia provided the clarification they needed that typically would be provided by an instructor in a more traditional face-to-face format. For example, as one student stated, “I'm not just reading this textbook by myself and figuring this out.”

Another theme that was central to how multimedia shaped students' learning over the course readings with their assignments was that it brought in real world relevance and additional perspectives. The categories of real world relevance and perspectives made up 26% (n=11) of units coded (N=43) in the analysis. These ideas of “real” and “life” were coded under RW to build an understanding of how these words may inform our understanding of authenticity and real world relevance specifically for RN-BSN students.

The focus of the instructors was on the relevance of the content to the students. As one instructor stated, “And I think this multimedia, whatever form it takes, takes again this dry complex content and makes it real to them.” All of the students mentioned relevance but their focus was on the idea of applicability that makes it real to them. For example, students made

comments like, “I would say, yeah. They're real. They're talking about what is actually the issue at hand, the things you need to consider.” Moreover, students described how the multimedia in NURS 242 provided an alternative perspective, which helped provide a personal connection that assisted in defining nursing. Like this student stated, “...just provides that extra perspective. It just pull's you in...tugs at your emotions, more feelings. Builds my perspective so I can define nursing” or like this student who said, “The multimedia [in NURS 242] gives it life, it provides multiple perspectives for looking at content...”

Also, students discussed how multimedia shaped learning because it served like a real teacher. For example, one student said, “I think when that person sat down, they were speaking like a teacher.” Another student commented, “While the instructor might not be commenting necessarily on what people are putting up, posting, at least this part [the multimedia] I know is correct.” In the problem-based and project-based designs the instructors act as a guide on the side and as the student stated, “it [the multimedia] just made it more valuable. Because really, a lot of the time, you feel like you're reading these text books, and you're just figuring this out yourself. And you're not really sure if you got it right or not.” Other students added the multimedia brought in an added personal connection, “it provides personal expression, intonation, can't get that from the text...” and another student went on, “the readings provide factual information but the multimedia videos and audios make it real to me.”

Another area of focus for both instructors and students was the idea that both readings and multimedia are tools that mediate their learning in their activities. Specifically, the instructors and students claimed that the multimedia, readings, and assignments bring the learning experience together. In fact, 23% (n=10) of the units coded in the interviews for this question fell under the coding category, “mediation.” The students did not differentiate between

how multimedia shaped their learning between focusing on a problem versus putting their projects together. Their comments referred to multimedia in general. For example, students stated:

- “So many different views, but all those different views kind of brought everything together.”
- “I don't know that it was just a particular type of videos. But it's all of the information put together.”
- “And really seeing every different side of it kind of brought everything together because it's kind of like a pie chart, and everybody kind of has his way of seeing things. But all of them kind of come to the same thing, but everybody sees it all explained in a different way.”

Nonetheless, when the instructors were shown an example of a student's reflection, one noted how the student would not have come to that conclusion without the multimedia. She stated, “I would say that she would not have come to that after this week's readings. This sentence would be, after reading this week's materials, I don't know why we're having a discussion of the definition of nursing.” Other instructors mentioned how integral the assignments were in supporting students' learning in addition to having the multimedia. Both courses had students engaged with peers around discussions and artifact creation. In NURS 242, students independently defined nursing and then shared their definitions with the group, in order to develop a team definition of nursing, and then they individually reflected on their experience. In NURS 385 the students worked on their projects, shared in the discussion board, and reflected on their projects. One instructor who taught NURS 242 discussed quite extensively how she felt it was everything together in the learning environment that shaped the students' learning

including the team discussions. As she said, “I think that discussion forces them to think. And that thinking is what integrates the information you've taken in into output that you can demonstrate to say, ah, this make sense to me. Now this fits in my life.” She went on to suggest, “...all the components are coming together, providing strength into their learning. If they were to merely have journal articles to read, I'm not convinced that we would have the depth of knowledge developed at as quick a pace as we do.”

This supported another instructor’s view on the value of the assignments in shaping students’ learning: She stated, “A lot of what shapes their learning-- maybe I should just say this in general-- are the assignments themselves. So that's what I think maybe creates the most challenge and change for them. I don't know it it's all about change, but learning.” Another instructor commented how closely the assignments were aligned to the nursing practice and how the readings and multimedia alone would not have provided the whole picture to the students. She brought forth the value of their participation in discourse with others:

We don't even make them take tests. We make them do assignments that show that this is nursing. Over and over, the message throughout this whole program is that when you learn this topic, you're learning nursing. When you learn research, you're learning nursing. When you learn management, you're learning nursing.

The student artifacts in NURS 242 illustrated how the number of themes that were referenced from the multimedia had changed from their individual assignments to their team assignments. The team leader was responsible for reviewing all individual posts in the discussion board and then posted a revised suggested definition based on all the individual submissions. The team leader’s final definition for the team included more units of meaning of the themes ($f=12$) than the original post in Week 1 ($f=4$). Moreover, in this same team’s Week 7 Team Final Presentation, the entire team expanded on the themes by creating a comprehensive

wiki that dedicated a page to the main components that they felt defined nursing. This was consistent for all teams in NURS 242.

In NURS 242, students' commented in their Review and Reflect individual assignments on how the team activities had the benefit of bringing in multiple perspectives. For example when students' were asked what surprised/interested/frustrated them about Week 1, they discussed the added perspectives that the team brings into the learning. This was one student's response:

...It surprised me how truly difficult it was to formulate a definition for nursing. Each one in the team had different perspectives on what concepts should be included. It was frustrating to concise the definition knowing that there's more to say about nursing and what we do. It is interesting to find out that we nurses have a hard time defining us...

At the end of the course, the students were asked whether this course changed their nursing practice, and, if so, in what ways? Students specifically mentioned their involvement with their team and how the added perspective from peers shaped their learning. Some representative examples included the following:

- "It was interesting to generate ideas with other team members"
- "What surprised me about this course was how difficult it was to define nursing and whether it was a profession. Initially I thought I would be able to easily answer this question easily but it took much more thought and discussion before I was able to complete the task."
- "Our team's definition of nursing is far from what I've imagined when I started the program... My perception of nursing eve just during my first week in nursing school changed entirely."

The difference in NURS 385, with the focus on their community health projects, was that students brought in the perspective in the discussions from their real world projects. Specifically,

students saw what was happening in other communities and compared it to their community projects. This was evidenced in the Project 3 Content Discussion for the teams. There were 48 posts in Project 3 Content Discussion for Team B which comprised of 4 students. The questions focused on their communities and Chapter 7 readings specifically, which was representative of the assignments in NURS 385 (see Appendix C for directions).

In the team discussion, the students made reference to the readings and supporting websites, but not the multimedia. The readings were presented in a technical way, but the multimedia was written to be more personal and was from an actual nurse. The content themes appeared to be implied through the community topics they discussed rather than explicitly stated, as was in the case with their responses in NURS 242. However, without the citations it was not clear from the analysis if the themes came specifically from the multimedia. Nonetheless, the students had to understand the topics that were presented in the multimedia, such as cultural competency, to be able to discuss and apply the concept to their community. For example, these were excerpts of students' posts in one teams' thread referencing cultural competency:

Student A: With these statistics indicating that the Asian population is such a large minority within the city, it would be very important that these individuals have resources in place that would assist their needs.

Student B response to Student A: It sounds as though [city name removed] has done a great job in meeting the needs of its community!

Student A response to Student B: Hi [student name removed]! I definitely agree that [city removed] had done a great job with cultural competency in regards to the Asian population. The wonderful thing about these facilities is that their staff comprises a high majority of Asian individuals to serve the needs of their minority.

Student C response to Student A: Did the county or state recognize the need or did the Asian community themselves start them? I ask because I feel like my community is lacking in resources such as these.

Student A response to Student C: I believe a lot of this is rooted in the

Asian minority themselves feeling empowered within their culture because they feel as if they have a "large" community of people to speak up and be supported. As nurses we must continue to promote cultural competency within our profession so that patients feel encouraged to share their beliefs and practices which essentially provides holistic care

Finally, evidence of the nursing education culture came through when the researcher analyzed the students and instructors' responses. For example, the non-traditional RN-BSN nursing students do not have much time as was evidenced from the interviews where students brought up the lack of time with work, personal commitments, and taking classes. Adding to that factor, the problem-based and project-based classes were not like their traditional education experience, which was typically in a classroom with a traditional, lecture-based format (Stanley & Dougherty, 2010). Moreover, one of the instructors commented that these nursing students specifically have personalities where they want to earn an A. As one instructor stated, "...if you ever wanted to see a triple type A personality, it's a nursing student. And so they want that A. Boy, they want that A really bad." Students supported this viewpoint in that they wanted to get the "correct" answer and wanted specific direction from the instructor. Example statements from students included the following:

- And the multimedia stuff at least made me feel like, while the instructor might not be commenting necessarily on what people are putting up, posting, at least this part I know is correct.
- Because really, a lot of the time, you feel like you're reading these text books, and you're just figuring this out yourself. And you're not really sure if you got it right or not.

In addition to these factors, the messy ill-structured formats were new to these students. One instructor who taught NURS 385 shared the following perspective that students need to be taught how to use the material:

I mean, from a scientific standpoint, it makes sense to have multiple modalities, whether or not they're using. And that's nurses and nursing, in general-- nursing education, in general, is notorious for continuing in the traditional vein of the student sits and listens, and you read, and you produce something-- you're not used to. And again, I'm coming back from nursing education perspective here. Rather than dumping something that seems not to be working, it would be better for the nurse educators to figure out a way to help students broaden the way that they learn. And especially since there is no such thing as you get your degree and you're done anymore. There is a need to for lifelong learning. And where these students, in particular, in all of these health care arenas that are changing focus, they are going to need to take advantage of future learning activities.

Thus, RN-BSN nursing students who were pressed for time, who were immersed in ill-structured online environments appeared to value multimedia that provides traditional supports. The next research question addressed what role the multimedia played to assists learning specifically.

Summary

The multimedia appeared to provide students with directive and divergent supports in an ill-structured problem-based environment. The students and instructors discussed how the multimedia served as a reinforcement to what they are learning in the readings and highlighted the essential components of what they needed to learn. The video perspectives appeared to leave an impression with the students. In the project-based design from the student perspectives, the multimedia provided them reinforcements of the essential concepts so they could engage in the activities. The instructors and students believed that multimedia in general brought the content to life and created real world relevance so that they understood the importance of why they were defining nursing.

There appeared to be value in having both the multimedia and readings to provide

perspectives and reinforcement of the concepts, but the team assignment appeared add to the overall shaping of their learning. In NURS 242, the team assignments added a peer perspective which appeared to build on their individual thinking. In NURS 385, the project seemed to provide an anchor for the students to apply the essential topics that they learned in the readings which were reinforced by the multimedia in the project discussions. An added value of the multimedia appeared to be the personal connection and focused support that was needed in both the project-based and problem-based learning environment.

Research Question 1b: What role does multimedia play to assist learning in individual activities and in activities where knowledge is socially distributed in online problem-based and online project-based learning courses? More of the multimedia in Week 1 of NURS 242, the problem-based learning course, was designed to provide scaffolding that was more divergent in nature (63% or 7 out of the 11 multimedia), such as questioning, probing, prompting, and elaborating, with an alternative perspective in consideration of the weekly challenges and activities, compared to the NURS 385, the project-based learning course, where the multimedia was designed to be more direct in nature (73% or 8 out of the 11 multimedia), such as providing reinforcement, cognitive task structuring, managing instruction, and direct instruction, in the context of helping them complete the three projects. This trend continued throughout the two courses.

Instructors and students made references to the role of multimedia in assisting learning. There were 44 units of meaning coded under *assisted learning/scaffolding* out of all the units coded (N=423) from the instructor interviews (N=6). Also, there were a 40 units of meaning coded under *assisted learning/scaffolding* out of all the units coded (N=308) from the students interviews (N=5). Figure 17 illustrates the distribution of the units across the role instructor's

(N=6) thought multimedia played to assist students' learning and the students' (N=5) stated role that it played in their learning.

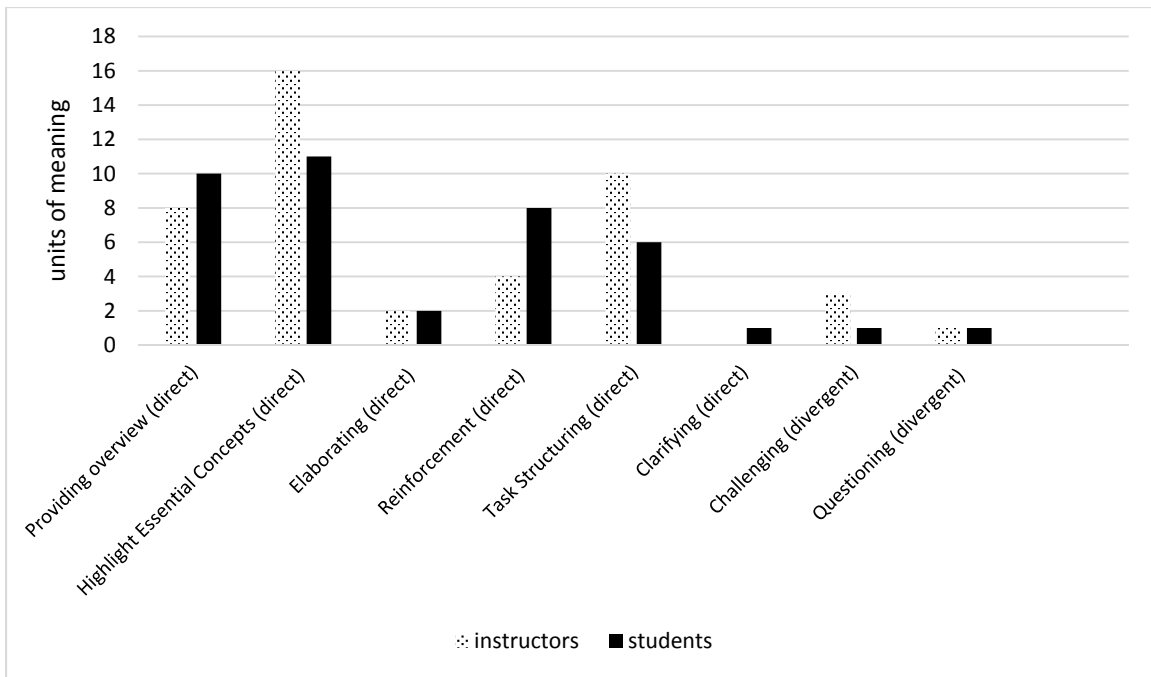


Figure 17. The role of multimedia in assisting student learning and the type of support it provided (in parentheses).

Initially, all the units of meaning were coded under *assisted learning/scaffolding*. However, since the researcher observed that the units could be further categorized into the examples of assisting and scaffolding learning published by Bonk and Cunningham (1998) and defined by others (Bonk & Kim, 1998; Collins et al., 1989; Tharp, 1993). Thus, the units were examined more closely and sorted into themes that had similar meanings as those published by Bonk and Cunningham (1998). The definitions were also used to assist in categorization. The units in this study specifically fell under the following themes: *providing an overview* (summarizing or providing direct instruction), *highlighting essential concepts* (drawing attention to), *elaborating* (incorporating “something” to revise knowledge), *reinforcement* (reiterating essential concepts), *task structuring* (explaining and organizing the task within students’ ZPDs),

clarifying (narrowing points of difficulties), *challenging* (pushing students' exploration), and *questioning* (to request a verbal response from learners while supporting them with mental functions they cannot produce alone). In addition, the researcher felt it was important given the educational cultures of the students and instructors to perform additionally analysis on the type of support that each felt it provided. Thus, the types of support that each provided was identified as either *direct* (providing overview, highlighting essential concepts, elaborating, reinforcement, task structuring, clarifying) or *divergent* (challenging and questioning). The groupings and units were reviewed by the second coder for accuracy.

Most of the multimedia that was identified by students and instructors was stated to provide direct support compared to divergent supports even though most of the multimedia in Week 1 of NURS 242 (63% or 7 out of the 11 multimedia) and some of the multimedia in NURS 385 Project 3 (7% or 3 out 11 multimedia) was designed to provide divergent supports. Additionally, the two instructors, who only taught NURS 385, did not want to address the research question because they were not even sure the students were using the multimedia. Nonetheless, students referenced static project flow charts, the interactive project overviews, the project managers, and the interactive multimedia in providing task structuring, reinforcement, providing an overview, and highlighting essential concepts. They also discussed the nurse consultants in NURS 242 as providing reinforcement, elaborating, highlighting, and providing an overview. All of these are direct types of supports, even though there were nurse consultants and project managers designed to provide probing and questioning. These are representative samples from students describing this level of support:

Example 1: But I guess if it were a topic I was trying to understand better and I was not really understanding what was the takeaway message-- what was I supposed to be understanding or gaining from that. That was the one that I would listen to.

Example 2: Like I said, I would read the book, try and understand what this definition meant, so what this concept is. She would give me the definition, but she would explain. It would be more like kind of I was talking to my instructor, but we're not exchanging anything.

Moreover, the video perspectives were seen to provide more direct support. Instructors discussed their value as providing an overview and highlighting essential concepts. However, there was one student and two instructors who insinuated that they adding value by challenging, which is a more divergent type of support. One student said, “But I learned a lot, you know, speaking to different-- each week there was a different person with a different level, and I really liked it on top of the nursing consulting.” The instructor added, “As much as they react to, how can this be true, that is also part of them saying, this material is authentic enough for me to believe it to be questioning it.”

Summary

Multimedia played different roles in assisting learning in problem-based and project-based designs. Even though multimedia was design to provide more divergent type of support in a problem-based environment compared to a project-based course, students and instructors reported the type of assistance they received for their learning was more direct in nature. Despite the NURS 385 instructors not addressing the role of the multimedia to assist learning in NURS 385, students specifically identified the static project flow charts, interactive project overviews, the project managers, and the interactive multimedia in providing task structuring, reinforcement, providing an overview, and highlighting essential concepts. Further, despite the fact that the multimedia was generally designed to be more divergent in nature in NURS 242, the students generally focused on the role of multimedia in general in assisting them in direct types of supports. Specifically, they mentioned the role of multimedia in providing reinforcement, elaborating, highlighting, and providing an overview. Moreover, while a few of the instructors

mentioned the role of the video perspectives providing divergent support for which they were designed, the majority of them discussed the more directive roles such as providing an overview to the students and highlighting essential concepts. The majority of the students focused on the direct support multimedia provided in both environments.

Research Question 2: What aspects of multimedia are most useful to online nursing students for supporting socially developed artifacts and for application to practice? When students and instructors were asked what multimedia was most useful to their overall practice, all five of the students and three of the instructors discussed how all of the multimedia together was most useful. They did not identify one specific multimedia. Representative statements from students included:

- “Everything had value.”
- “It all impacts me.”
- All of it. I think it's a blend. It's hard to pick one. In any class, it's hard to pick one. I think they all work together. You do the assigned reading, you listen to the multimedia, and watch the video, and it kind of all brings it together. It's hard to pick one. Each of them kind of brings something to the plate.”

The researcher also asked the instructors and students to rate the usefulness of the multimedia to their learning in NURS 242 and NURS 385 with 1 being the least useful and 5 being the most useful. When the researcher asked the students about what aspects were most useful to them in their team assignments all of the students blurred the lines between the types of assignments. This could have been a result of how the course design was structured. For example, one student illustrated this by stating, “That would have been in an individual assignment. Most likely-- I'm thinking about, I'm remembering, it would've been on one of the

discussion boards. So the discussion board, either the initial post, or a follow up post.”

Instructors and students generally agreed that the most useful multimedia for their learning in NURS 242 were the perspective videos. In fact three instructors stated that the video perspectives were the most useful because they stimulated critical thinking and got them into the content. Statements included:

- The content is in the video, OK? That's the message.”
- “The video perspectives open up the topic they get kind of angry about it. They see what that perspective is, and they sort of get started. But I think that they probably stimulate their critical thinking more than other ones.”

In contrast, the themes that the students discussed as being most useful to their learning focused on how they brought in a personal connection (i.e., “I can’t get a personal connection or the intonation with text.”), provided perspectives (i.e. “It pulls you in and builds my perspective.”), and helped them make connections to practice (i.e. “It kind of brought me to the real world, because I'm reading this research, I'm reading the literature, I'm listening to the nursing consultant. But having somebody in the real world giving me real facts, it was kind of like, OK, this is real, and this is what's going on. It's not just theory. It kind of put a little bit of practice in it.”).

When asked if there were any drawbacks to their learning, comments for students focused on their believability and truthfulness. For example, one student stated, “Just wondering if it was-- if these were actual health care providers or not. Now, that didn't necessarily discount what they were saying, but it was something that ran through my mind that might have been a little distracting.” Another student mentioned Marilyn’s facial expressions as a drawback, “Her face looked like she was on a rampage or something, like she just had to be stern about what she was

saying, like she was expecting to be obnoxious.”

The instructors’ feedback on what aspects of the video perspectives were most useful centered on the fact that their content was reported as factual and relevant. These statements included:

- “It has factual content.”
- “It is the relevant, authentic, real information they are supposed to be getting from the topic.”
- “It’s critical information.”

One instructor noted that the video perspectives set the stage for the students, but her focus was on the information they provided. She said, “I think it gets them into the topic. It kind of gives them an appetizer. And it sets the stage for where we want to go with the information.”

Another instructor suggested more of an emotional connection to the content: “It has some emotional content in it. And I think that’s what draws the student in and really has an impact on them in the beginning.”

The majority of the instructors did not see any drawbacks to the perspective videos for the students’ learning, but one instructor felt that the video perspectives were limited because they did not provide any further investigative prompts for the students to explore. She stated:

Because they have to farther than that. They have to look at the evidence that says a nurse is not a nurse. They can question it. They can look at this and say I don't believe that. But then they have to go and say why the evidence shows that they don't believe that. If they go to the evidence, they're going to find out that now they're going to believe it. That the IOM report does say the mortality rate is 10% higher. It is massive. And so they're not going to be able to find evidence to support their argument. But it only stimulates them.

The instructors and students generally reported that the next useful multimedia for their learning in NURS 242 was the nurse consultants. For NURS 385, most instructors believed the most useful to students’ learning was the program managers because they included the lecture

content. However, all of the students reported that the project managers were the least useful to their learning in NURS 385 because they did not assist them in completing their projects. The instructors generally felt the interactive multimedia in NURS 385 were the least useful to the students' learning because they did not include all of the content, but the students felt they were the most useful to their learning in NURS 385 because they helped them complete their project.

The aspects that the instructors found useful about the nurse consultants focused on the direct support they provided: highlighted essential concepts, provided an overview, and brought the content to life for the students. Students provided a variety of reasons why the nurse consultants were useful to their learning. Two students agreed with the instructors and discussed how the nurse consultant highlighted essential concepts, one student discussed how the illustration was engaging, one student liked the variety of mediums, and two students discussed how the multimedia seemed real. For example one student stated: "she [the nurse consultant] seems more like a real person-- emotion and the way that her face moves. And it wasn't overdone. And she was able to pronounce things and not make mistakes."

Given that the nurse consultant was not rated as highly as the video perspectives, the researcher asked the students why they did not rate it as useful as the video perspectives. The comments focused on the fact that the nurse consultant, which was an illustration, was not a real person like the video perspectives. They also focused on the fact there were some pronunciation errors with the nurse consultant. These statements included:

- "The animated the avatar videos, I remember there being some errors in pronunciation and terminology a little bit. So I did kind of wonder about the-- like you said, maybe the authenticity of the people who were speaking. So that comes to mind."

- “The nurse consultants are hard to relate to. Don’t appear real.”
- “Don’t want hypothetical, want real.”

The students’ views of usefulness between the nurse consultants that included the video in NURS 242 and the project managers that had audio only in NURS 385 were similar, but the project manager that had audio only were rated slightly lower. Students still found them valuable in providing a personal connection given the audio was of an actual person. However, students focused on wanting reinforcement. As one student stated, “I usually would forego those for the transcript.” Another student said, “So I mean, I know that's probably a different issue, but I did appreciate having a visual.” Students and instructors agreed that there seemed to be an added benefit adding the video with the audio. As one student stated, “But in some cases, I think maybe audio, especially if it says examples, maybe a link to a visual, like a photograph or a little video clip of a project might be helpful.” This was reinforced by the instructor. She stated, “I do think that the image of the person talking is a little more engaging.”

Finally, the least useful of the multimedia the instructors and students reported was the interactive multimedia. The comments that instructors made about the usefulness of these multimedia related to how they highlighted essential concepts. They offered more reasons why they rated this multimedia least useful, which centered on an overall lack of detail provided in the content and the lack of engagement/variety in the type of medium. Students also agreed that these were the least useful to their learning in NURS 242. The drawbacks that were provided about the interactive multimedia from the students in NURS 242 were that, “it didn’t help with recall” and that, “...not all of it adds to their knowledge base.” Specifically, one student stated, “I would say it depends on the information that's presented and how much knowledge is added to me. If it's something that, OK, I get it, then I feel like it didn't add much.” The positive comments centered on the fact that they liked the variety and the reinforcement it provided. For

example, one student said, “The only true benefit of them was aesthetically. Like I said, because going from page to page, it's really boring. So the only use I have for them was it was nice to look at something different that broke up the monotony.”

However, they rated this multimedia the most useful to their learning in NURS 385. The students stated that helped them specifically in NURS 385 with task structuring of their project. As one student stated, “It's useful to me because I can go back and look at it as I'm doing my reading or projects.” Yet, instructors said it was least useful because they didn't see them using it. As one instructor stated, “I don't see them making the connection between the image [interactive project overview] and their assignment.”

The researcher asked the students and instructors if there was multimedia that would be useful to their learning that wasn't in the courses. The majority of the instructors reported that there was not anything that could be added to make the experience more useful. However, four out of the five students focused on bringing in real nurse perspectives into all of the courses. This perspective from one student was reflective of their viewpoints:

Let's see. I just really like the ones with the real people quite a lot. But I think that from these two, it might have been helpful to see real videos. 385 was-- like I said, it was a struggle for me. That was probably the most-- the biggest struggle of any one of them. So I think that maybe if it started out with a couple of real nurses. Like saying, hey, I do this in community health. Hey, I do this in community health. Like that kind of thing. Not like a million, but if there were two, three, four of them. If they set the tone for why should you care about all this work you're about to do, I think that I may have been more understanding of the purpose of it. So maybe showing one saying, like, OK. I do this in community health. And if there's one thing I'd do, it's advocacy. That would be something that would have made me care about it more from the start, and understanding the work I was about to do.

Summary

Instructors and students both reported that perspective videos and nurse consultants were most useful for learning in NURS 242. While instructors felt the program managers were most

useful to their learning in NURS 385, the students felt the interactive multimedia was most useful. The video perspectives brought in personal connections, new perspectives, and helped them make a connection to practice. Believability and truthfulness were identified as possible drawbacks of the perspective videos. Instructors focused on the fact that the content of the perspective videos were factual and relevant.

Nurse consultants in NURS 242 were rated not as useful as the video perspectives and the students focused the drawbacks on the fact that they were not real nurses. Nonetheless, instructors felt they were valuable in that they provided an overview for the students, highlighted essential concepts, and brought the content to life. The interactive multimedia were rated least useful by the instructors in both NURS 242 and NURS 385. The majority of the instructors focused on how they highlighted essential concepts, but did not provide the necessarily details or variety to the learning experience. The students reported that the interactive multimedia were the most useful to their learning in NURS 385 because they highlighted the essential content. In NURS 242, the students liked the variety they added to the course and the reinforcement they provided of essential concepts.

Overall, instructors did not have suggestions for new multimedia to add to the courses and feel that all of it together adds to the students' learning experience. Students reported that they wanted see more real nurse perspectives added to the courses.

Research Question 2a: What attributes of the multimedia do the designer, instructors, and students believe are most useful? Overall, the designer, instructors, and students reported that the most useful attribute of the multimedia was its' authenticity. This section will compare the students' responses to the instructors' responses to illustrate this point.

Students focused their answers on the attributes that got them as close to an actual nurse expert as possible and had immediate application to practice or to the course. For example, general statements from students included

- “Probably in 385, it was the audio excerpts, because, like I said, she kind of brought up questions that I was thinking of. And so it was interesting to find out what she had got to say.”
- “The real actors each told their own story if I remember right. Like I am so and so, and this is my experience.”
- “If I look at this one [project manager], what's the difference between a community help nurse and a public nurse, it does give you a difference between the two, but it doesn't pinpoint-- like, in real life, what are the role of the nurse or what kind of exposure they have, or what kind of setting they have.”

Instructors focused on attributes of the authenticity that centered on the content specifically. For example, instructors reported that watching the video perspective was a more useful attribute over reading the transcript. They focused on the fact that the actor provided emotion and emphasized the content in the way in which it was intended to be delivered which went beyond the transcript. In one instructor's words, “Seeing the image, hearing his voice inflections and his hand movements add emphases to important aspects of the script.”

Students reported that the video was a useful attribute but focused on the fact that it showed them an actual nurse which was part of their definition of authenticity. For example, one student stated: “It gives me an idea of what a real nurse looks like. What a nurse would think.” and “I liked the live people.” Further, the students added that the video was valuable because they were able to see the truth in how the nurse speaks on the topic. Statements like, “Watch

body language I can see his truthfulness...” and “I can feel what he is feeling...” illustrated this point. One student expanded on the usefulness of body language in that watching the video allowed her to connect with what is going on in the real world. The student stated, “Oh, now, body language is really important. When he's talking about the topic, you can see how serious he's taking it, and you can see how serious the topic is. All the body language, it counts.”

Likewise, the students reported that the transcripts were just as valuable of an attribute as watching the video because it was applicable to their success in the course. As this student stated, “Because like I said, just hearing and seeing a video, I can't always remember the details.”

Moreover, most instructors reported that watching the video perspective was a more useful attribute over listening to the video perspective because students became engaged from watching and the body language added a lot to the learning experience. However, their statements were more general compared to the students. Instructor statements included:

- “It just adds more interest, facial expressions and all that kind of good stuff.”
- “Whether it's the cartoon avatar or the live actor is just simply more engaging to the viewer.”

However, the students stated that watching the video perspective as more useful to their learning than listening because it connected them to an actual nurse. This was an attribute that the instructors did not mention. For example, one student stated, “It gives me an idea of what a real nurse looks like. What a nurse would think.” and “I liked the live people.” Further, the students added that the video was valuable because they were able to see the truth in how the nurse speaks on the topic. Statements such as, “Watch body language I can see his truthfulness” and “I can feel what he is feeling” emphasize this theme.

This theme continued with the other multimedia. Even though the nurse consultant was an illustration, instructors' responses for why it was more useful to watch the illustration than to listen to it was the same as the video perspectives. Instructors' reasons focused on the benefits of the body language in getting students' attention, for creating a truthfulness, and for helping make content relatable. One instructor stated the benefit of the nurse consultants as illustrations specifically. In her words, "I think the illustrations are more useful so that they can try to relate the information to themselves." However, the instructors were specific in that the medium chosen should depend on the content. For example, one of the instructors felt that for essential information you wanted students to focus on, audio would be a more appropriate medium because it would focus students on the important elements. She stated, "This online nurse consultant is offering a bit of a challenge to the students. Like, so why does it matter. It's better to listen to something like that."

However, students reported wanting to watch over listen because it was more entertaining (e.g., "I guess we like to be entertained"). They also noted that watching the nurse consultants at first was interesting and engaging, but "by the end of the course they are not that good anymore." Overall, it appeared that the majority of students desired authenticity over entertainment. As one student discussed, genuineness being an issue. She stated that she would rather listen to the nurse consultant because it was, "...hard to relate to the illustration."

This was reinforced when students reported whether watching a real nurse's perspective would be more useful to their learning over watching Jake who was an actor portraying a nurse. The majority of the students did not realize that the video perspectives were actors even though it was stated in the course. As one student stated, "As they said they were the one, the black man, talking about the chairman of a committee on the NSNA, it was more believable that they were

really nurses.” Another student said, “I was surprised to know that they're actors because I thought-- they had me fooled.” All of students expressed the importance of having a genuine quality in the perspective videos. In other words, if the videos came across as genuine, then they were able to believe them and relate to them. These were some of their statements:

- “I can relate to a real nurse. The nurses in NURS 242 seemed real. They were genuine.”
- “It's about the truth, not that it's a real person, but the truth of the message.”
- “As long as they appear genuine, the actor is fine.”

One student said, “Without a doubt, a real person, a real nurse. A real health care provider,” but did recognize that it might be technically difficult to capture a real nurse and get the message across and still be genuine. This student said, “And then I realize it's hard to get all the information in. I imagine you would have to put together clips of someone talking about these subjects to get the important information across, but at the same time, be genuine.”

However, instructors’ views were mixed on which attribute was more useful. Three of the instructors reported that watching a real nurse video perspective was more useful for students’ learning while the other instructors felt that watching the actors over the real nurses were more useful to learning. The comments related to issues watching the actual nurse centered issues with alignment to curriculum and they reported that it may difficult for a real nurse to get the message that was intended across to the students. For example, one of the instructors said: “Well, I think that probably the actor ends up being better, because what I had said earlier, unfortunately, the real person tends to not be as good at communication. They just aren't. Their voice quality won't hold, and they won't be able to do it.” Another instructor discussed how actual nurses may not be the right decision in all cases depending on the content. One instructor brought in an example from another class that used video cases:

Real nurses are better. However these nurses in this class were also not real. These were not real people-No, they were showing a process. Because they actually made a situation, should never do. Oh my god. How many times have I done that when I haven't even looked up at the patient? What is Sue doing? But that's powerful in that class.

Also, when instructors were asked about which attribute would be more useful: watching an illustration of a nurse or watching a video of a real nurse, the majority of the instructors reported that an illustration would be more useful. Their rationale of the value focused on the variety the illustration added to the course. As one instructor stated, “Otherwise, you could very easily stray into having everything be the same. Then why don't you put the whole course on video with actors and be done with it?” There were also concerns that focused on the needed level of emotion being dependent on the type of content provided. As she stated, “The nurse consultant provides more factual details, if you will-- not quite the same degree of emotion.” This was supported by another instructor who believed it depended on the content. As she stated, “I think it depends on the subject matter. In this case, this is fine.”

Consistent with the theme that students desired an actual nurse, the students reported the reasons for wanting a “real person” focused on the genuineness of the video and connecting with a real nurse. One student commented how disliked the quality of the illustrations. She stated, “I'd rather have the real nurse, so I'm not so busy picking apart how she looks or how she got animated.” Two students commented how the audio did not seem to come from a real nurse in the nurse consultants. As a result, even though they were illustrations they were seen as useful to their learning. These statements included:

- “I feel like, yeah, I think I might rather have a real person telling me this stuff. And it was the same with-- some of the audio, I can't remember which exactly, what classes this was from, but it was a woman's voice. Now the audio I'm thinking of, it did seem genuine...”

- “Right. And it seemed like some of these I was listening to maybe came from my actual instructors, or-- I guess I was imagining [name removed] saying some of these things.”

The question of whether to include illustrations in multimedia was more difficult for both students and instructors to answer. This hesitation came across in their answers. For example, one instructor said, “That one's a toughie.” and another one said, “Wow, now that is a good question.” Instructors provided responses that focused on the fact that the illustrations are more visually appealing so they are useful attributes. Their statements included:

- “Attracts your attention more.”
- Illustrations are visually appealing.
- I think it's more-- yeah, it's more appealing. It's like, hmm, what's that all about. Let's see this.

However, instructors also noted that the use of illustrations depends on the content because while the illustrations were appealing, they may distract students from the content if they do not align. These statements included:

- “If it is not connected, you don't need image.”
- “Well, the photos are just nice pictures. They don't say anything about the topic. You look at etiology and you look at what it's defining. How is that connected to that photo? I don't pick up any connection. It's just a picture of a nurse.”

Instructors also reported that illustrations and real photographs would both be beneficial depending on the content. As this instructor stated with regard to icons, students do not need real photographs: “But I know that was a stop sign. I don't need to be able to translate it. So if I see

an airplane, it doesn't need to be a real airplane to tell me, oh, that has something to do with getting from one place to another.”

The students also had mixed views as to whether the illustrations were useful attributes to their learning or if real pictures would be more valuable over illustrations. They could not provide reasons for why they sometimes preferred real photos and other times they preferred illustrations. They mentioned they liked the colors of illustrations over text only. In addition, they would rather have a graphic provided as an interactive multimedia than text alone provided in a transcript. As one student stated, “Because they're engaging. I'm trying to picture this with just the words there. Now, the graphic for empirical doesn't really make sense to me. And maybe not the moral one either. But its color, and it draws the attention.” Nonetheless, the students reiterated that if the illustration did not assist their learning, then there was no real added benefit for having them. These statements included:

- “There wasn't a benefit for me in this particular kind.”
- “It didn't help my learning.”
- “I don't know that the illustrations were that big of help to my learning personally.”
- “It's just more details.”

Summary

Overall, the students and instructors believed that the most useful attribute was the authenticity of the multimedia, while colors and the variety of multimedia, like the nurse consultant, may have provided useful attributes, such as engagement. The instructors and students had some of the same views as to what attributes were most useful to their learning, but they also had different views based on their views of authenticity. Specifically, instructors

reported that watching the videos were a more useful attributed to students' learning compared to reading the transcripts, but the students reported that they were equally useful. The majority of instructors and students both reported watching video was more beneficial to their learning over listening regardless if it was an illustration or a video of a live person. Moreover, instructors and students agreed that videos of real nurses would be more beneficial than using actors, but most students did not realize that the course used actors for the perspective videos. Instructors and students differed on the usefulness of illustrations of the nurse consultant for their learning. In particular, the students reported that a real nurse would be more beneficial than an illustration because it would be more genuine and they could connect more with it. However, instructors felt that the illustration added a level of variety and engagement that would not come from real nurses. Instructors believed that including images was visually appealing but usefulness was dependent on the content, whereas students either reported that an image was useful if it assisted their learning. Finally, instructors reported that between illustrations and real photographs they both would be beneficial attributes, but, again, it depended on the content and students' preferences. The students agreed that usefulness of photos versus illustrations depended on the content and students who said that illustrations would be more useful could not provide a reason.

Research Question 2b: How is authenticity articulated by the designer, instructors, and students? The researcher asked the instructors, the SME, and students to define authenticity, provide the key attributes of authenticity, and to describe what makes the multimedia in the courses authentic. The researcher was also the designer so she provided her definition for comparison. The students and instructors' definitions initially appeared at face value to focus on similar attributes when focusing in on the words they used. The frequencies of the words used by the instructors, SME, students, and the designer to define and discuss authenticity are presented in

Table 15. Key words instructors, students, SME, and designer use to define authenticity

Table 15. Key words instructors, students, SME, and designer use to define authenticity

Instructors (N=5)	Students (N=5)	SME (N=1)	Designer (N=1)
genuine (<i>f</i> =1)	genuine (<i>f</i> =2)	and make it real (<i>f</i> =1)	real world (<i>f</i> =1)
real (<i>f</i> =2)	sincere (<i>f</i> =2)		
based in some system of knowledge (<i>f</i> =2)	factual (<i>f</i> =3)	take complex concepts (<i>f</i> =1)	relevance (<i>f</i> =1)
validity (<i>f</i> =2)	accurate (<i>f</i> =1)		come to life (<i>f</i> =1)
evidence (<i>f</i> =1)	valid (<i>f</i> =1)	real (<i>f</i> =1)	
true (<i>f</i> =1)	full disclosure (<i>f</i> =1)		in practice (<i>f</i> =1)
truth (<i>f</i> =1)	true (<i>f</i> =4)	reality (<i>f</i> =1)	
evidence-based (<i>f</i> =1)	honest (<i>f</i> =1)		
citable (<i>f</i> =1)	not contrived (<i>f</i> =1)	in practice (<i>f</i> =1)	
credibility (<i>f</i> =2)	current (<i>f</i> =1)		
	applicability (<i>f</i> =4)		

The majority of the students' statements focused on the role of the expert nurse and their connection to an actual nurse. In contrast, instructors' and SME's statements focused on the role of the content with a real application to practice. The designer's perspective focused on the immediate application to the students' environment or real world.

Genuine/sincere. For multimedia to be considered authentic, four of out of the five students reported how it had to be genuine or sincere. When multimedia was seen as genuine or sincere it was relatable and credible and ultimately believable to them. These students stressed the importance in statements like, "It is very important that it [the multimedia] feel genuine. Lends a credibility which we are all adults. It is a turn off if it wastes our times."

There was only one instructor who mentioned the word "genuine" but did not discuss it in context of a connection with a person. For example, when defining authenticity she said, "I would have to use several words that are, like, real, true, genuine, having a basis in some system of knowledge."

In terms of the videos in NURS 242 being genuine or sincere, even though there was a statement in the course overview in NURS 242 that the perspective videos were actors, the students did not seem to understand this. This was supported by the SME who stated that the students forget that the characters were actors. As she stated, "We do tell the students in this course that these are actors playing fictional characters. They read that in the first-- it's in the overview of course, I think. And I think they forget it."

There were student who responded favorability to the perspective videos' usefulness but also said they would continue to have real nurses in the videos. Given that the video perspectives were not real nurses, the researcher reminded them they were actors. The students appeared shocked when the researcher told them that the current videos were actors. The students gave

comments like the one student previously cited who said, “I was surprised to know that they're actors because I thought-- they had me fooled.” However, the students still stressed the value of having an actual nurse, but also noted that the content was authentic. For example, one student said, “Don’t want actor want authenticity. Want to stick in my brain. But the content is presented in an authentic way. You can empathize with Jake so I liked them. However, an actual nurse would be more valuable.”

If the students felt the videos were genuine or sincere, they tended to connect or empathize with them. The focus was on the person. In contrast, the SME focused on the authenticity of the nurse content and that the video appeared as a nurse rather than students connecting or empathizing with Jake. For the SME, it was not about the connection with the actor, but the fact that the content was written by someone who was real and that Jake appeared like someone who was real. Her statement reflected this focus. She said, “The script was written by a nurse. And so I think that it's important-- he's dressed like a nurse.”

Another instructor supported the SME’s claim by focusing on the fact that the content was about nurses. She said, “So, they’re like, real life roles of nurses in the videos.” However, students reported making a connection with the video because they were genuine or they appeared real. For example, one student said, “But the things that are the most authentic is showing those individual stories, like Jake's.” The student went on to add:

I think the real videos help with the authenticity of it. Because like I said, in nursing, I think it's the opposite end of the spectrum for me. Like authentic or hypothetical, and there's a lot of things we'd have to study that are hypotheticals. But adding the real videos was what made it more authentic to me.

They appeared to desire this connection by hearing real stories from real people that were genuine and relatable to them. Another student commented, “We should see more male perspectives. Real Stories, Real settings as close to my real unit as possible.” The students

reported to want to connect with real nurses and the video perspectives, as this student commented, got them close to that reality. One student stated the following:

I think that people go into nursing because they like to connect with people. So I think the kind of connecting with a real person's story made it most authentic to me. So the real videos helped that a lot.

However, when the multimedia was not seen as genuine or sincere then that believability or connection may not happen. For example, one student commented on the fact that Jake's behavior made him seem like he was not a real nurse. When the researcher asked the student, who mentioned that Jake didn't seem genuine, how the video of Jake could be made more authentic, the student responded that it would be, "something that doesn't feel prepared." The student made the following comment about Jake:

The audio and video often sounded like somebody was reading off cue cards or from memory. So I guess more somebody giving information in a more spontaneous way. I was kind of distracted by Jake's video. I mean, he was kind of fidgety, he was clearly it wasn't spontaneous. But I wonder how many of these things come into your subconscious when you're watching something like this. Maybe if he was sitting at a nurse's station. Or I'm not sure. But the dark background just feels kind of like you're interviewing a convict.

The SME wondered if students saw Jake as a real nurse. She had not heard students mentioning any issues with the videos specifically. As she stated:

One thing of interest in either class-- I've never heard anyone complain about the voice or the look or-- anybody who's using it, they're not saying, oh that voice is drive me crazy or, boy, her acting is awful. So the quality of them must be good. Or at least the quality is not distracting them.

In fact, she specifically recognized that students make a connection with Jake, "It's not until they listen to Jake that he says that, too. So they connect with Jake." However, the instructors place importance on the content that Jake was delivering for the authenticity. For example, even though the students reported the value of the videos as they currently exist in the course, one instructor reported that it is time to change the content. She stated, "I think it's time

for him to retire. We have to keep this stuff more current.” She went on to state that a real nurse that was recognizable in the field would add more of a connection with the students because a real nurse would be recognizable and provide more emotional about the content.

So I think that the fact that we're attacking these topics in the beginning, and if you had not an actor and you had a real person that was in nursing that they knew about or hears about, you would even more connect that these people are-- we not only teach this stuff. But we believe it

Factual/accurate/valid. The students wanted to know that the content in the multimedia that comes from this expert nurse was factual and current. All of the students made comments around the importance of the multimedia content being real or not made up. Common statements included students who said, “like, a real fact” or in another student’s words, “not something made up.” The student who reported being distracted by Jake’s genuineness still commented that the content was valuable because it was true and important. The student said, “So sometimes I had to think, OK. Well, if it's up here, it was important that this stuff be conveyed to me. And maybe the video was kind of hokey, but the information is important.”

Four out of the five instructors focused on the fact that what is authentic about the multimedia was the factual subject matter. For example, instructors spoke directly about the multimedia authenticity in courses by focusing on the content being factual. Representative examples included:

- “I think that they tried to get at the essence of the care population-- the focus on evidence-- but also there's some big concepts of vulnerability.”
- “I think that there is one in there talking about the different roles of nursing and the different kinds of clinics and nurse led clinics that are available to patients. And so that's true. Those are out there. That's real. “
- “And then I think in the interactiveness of the media, there's a basis in-- with

some citations, but also a basis then supported by the things that they read that says this media is authentic. This is real. This is genuine. This is based in fact, based in nursing knowledge.”

One instructor suggested that students connect with content when they have reason to believe that the information was valid. She claimed that if students found content factual or relevant, then they would view it as important enough to learn. She stated:

The idea of the profession is important. The definition of nursing, I think they see that as an authentic concern. Chronic illness and wellness, they fight a little bit against whether nursing is health-based or illness-based, but that's just, I think, something that they are-- again, it's authentic enough to make them react to it and get to their gut. And a lot of learning takes place when your gut's involved.

Three of the five students stressed that they wanted the content from the nursing experts to be accurate. Student responses included the following statements.

- “I would want to be able to depend on it to be factual and be something that is tied in to the material that we're learning.”
- “If you've been paying attention to it, you have to feel like it's giving you some material to base what you're thinking on.”
- “If you go to the internet or if you Google-- not Google. If you look up another research or the paperwork, you're going to find the same issues. You're going to find the same information as in the assigned reading, talking about it, and how real ongoing research are talking about it. So it makes it real.”

Credibility. Another aspect that added to the multimedia being seen as genuine and sincere, was its’ credibility. The students not only wanted to hear a real nurse’s perspectives, but they wanted what they said to be truthful. Four out of the five students specifically mentioned that authenticity involves building credibility or truth. Representative statements were illustrated

by students when they said, “we want the truth” and that “truthfulness adds credibility.” Another student specifically mentioned that one of the video perspectives, Marilyn, did not seem credible because she came up with thoughts on her own and did not ground them in evidence.

Specifically, the student commented:

I'd just like to know that I'm learning something from expert opinion. That's why the one lady [Marilyn] that had her six criteria flustered me because I've got the impression that she had just come up with these on her own. And so I kind of was like disagreeing. Because I never found anything in writing that substantiated all six of those criteria. It's important for me to think that I'm learning something from somebody that knows more than I do about it.

One student discussed the interactive multimedia material and said it was valuable because it was prepared by an expert nurse. The student said:

I guess I had the assumption that the material was gathered and prepared prior to actual presentation. It was gathered and prepared by faculty or curriculum nurses or nursing faculty who were involved in what information was presented. Not necessarily how it was presented.

Another student commented how the videos seemed credible and authentic because they presented who they were upfront in the videos. The credentials added authenticity. The student said:

They introduced themselves as such and such of a nurse. That they've been a nurse for those many years. Or they are involved in this aspect of nursing. So that made them seem authentic.

Two of the five instructors discussed the importance of the information being truthful and how it can negatively impact instructors if credibility is lost. For example, one instructor stated, “Students will just tear you to shreds if they find any flaws in stuff. So if you're talking about implementation of the Affordable Care Act at some aspect and that isn't in place anymore, then your credibility is gone. And they aren't going to listen to another word, because they're going to start doubting everything you say.”

Two of the instructors' views on credibility centered on the type of image that is portrayed to nurses. One instructor focused on the drawbacks of giving an illustration or photo to nurses that portray nurses in a stereotypical light. She commented: "...if something is in any way an image for them-- is sending them away, that's not good. Like, too many stethoscopes and clipboards could really send them away. And that would not be good."

Another instructor mentioned that if the multimedia were something other than a nurse, it would lose credibility and the students would not see it as true.

I think the nurse consultant, in the fact that we use a clinical person to speak of theory and content adds a truth, a reality to it, in that, oh, this is something nurses talk about... If you'd used bunny rabbits or like I said, a Cherry Ames-looking nurse to be talking about whether nursing's really a profession or not, most people would not see that as really authentic and true.

Applicability. The last theme in all of students' definitions was the idea that the multimedia content should have value to them in the context of the class and beyond. Two students discussed how some of multimedia in the class had this type of applicability.

- "It helps me with practice."
- "It gave me more understanding of what nursing is. And it kind of opened the door for me doing research, because before then, I would look up some topics online, but I wasn't more like a research-research person. But after that class, even when the assignment is not required to do some research, I like to look it up and see what other people think about it, what a researcher did about it, what was the result, stuff like that. And I kind of wanted to know what's currently going on right now in the nursing field."

While some of the multimedia had this type of authenticity for students, other multimedia did not. For example, one student discussed one of the project managers in NURS 385. She

stated it wasn't authentic because, "it doesn't pinpoint-- like, in real life, what are the role of the nurse or what kind of exposure they have, or what kind of setting they have." The focus was on the nurse specifically. Another student commented how she wanted an expert nurse to tell them why the content was important to them which would have added to its' authenticity. Specifically, this student discussed this in context of NURS 385: "It doesn't have to be the path I want to take in my career." The student further stated, "If somebody is explaining to me why this is important, then I'm more receptive to learning about it. So those are things that add authenticity to me."

Moreover, three students discussed how creating real experiences that are directly applicable to them are much more valuable to their learning than hypothetical scenarios. These perspectives focused on the real application. For example, one student stated, "The multimedia should have real world relevance to my practice verses hypothetical that won't use."

The six instructors focused the majority of their discussions of authenticity on applicability and relevance to practice. The SME also discussed the importance of the authenticity to be tied to practice and how these courses reflect authenticity at the core of their design. She said:

We don't even make them take tests. We make them do assignments that show that this is nursing. Over and over, the message throughout this whole program is that when you learn this topic, you're learning nursing. When you learn research, you're learning nursing. When you learn management, you're learning nursing.

The following statements provided by the instructors were representative of the types of comments that were made by them regarding authenticity being tied to application and relevance to practice.

- "So in every case, in both courses-- so 385, we're talking about the multimedia homes in on why this is nursing, why this is real to you. Why this is real life. This is not just

a chapter you were assigned to read so that you could do the assignment, take the test.”

- “But to be drawn emotionally in to something that is real then allows learning to take place and makes a big difference in why I should keep this content in my brain for my career, if you will.”

Timeliness of Subject Matter. The final area that all of instructors focused on that only one student mentioned regarding authenticity was keeping subject matter current and timely. The student said, “Something that's current. Like a current issue, something like a matter that many facilities are going through.” The instructors felt that that for multimedia to be authentic it must be kept up-to-date. As one instructor reported the challenge with keeping multimedia current. As she stated, “Multimedia must be kept up to date. And that is difficult because of the changing nature of health care and the political nature.” Other instructors carried this same theme through their comments. Examples included:

- “We work off of what has been found to be accurate to the best of our knowledge at that point in time. “
- “I think that the only thing I see about authenticity is the age of things.”
- “The concepts of caring really hit them strongly. So that says to me it's current and authentic.”

Functionality of Medium and Engagement. The attribute of multimedia being engaging and providing variety were both mentioned by students and instructors, but these factors were not the focus of their definitions of authenticity. Rather, they appeared to be factors that happened as a result of the multimedia in the courses being authentic. For example, students

discussed how they would prefer content to be presented as a graphic over text alone because it was engaging but that having the content be presented by an actual nurse was more in aligned with their views of it being authentic. Instructors focused on the content first in terms of authenticity and then multimedia medium having the capacity to add in variety to engage students. However, for the designer, two essential factors in her view of authenticity was focusing on the medium so it was useful and engaged learners. The following are examples the designer wrote when she defined why the multimedia in NURS 242 and NURS 385 was authentic.

- The nursing consultant is fun to watch and engaging.
- The audio makes the probing come to life and really brings the emotion forth for the students.
- The interactive multimedia provides useful information in a quick and easy to navigate format.
- The program manager explains content through audio which may be more useful then reading a long article about the content.

Summary

At face value of the key words presented in

Table 15. Key words instructors, students, SME, and designer use to define authenticity

, it appeared that the way students and instructors defined authenticity was similar. However, with closer examination of the focus of the statements, a majority of students'

statements focused on the connection to nursing experts. In contrast, the majority of the instructors' statements focused on the connection to content. This was consistent with how the SME viewed authenticity. Thus, her perspective was more in line with that of an instructor. Conversely, the designer's view of authenticity did not focus on content specifically or the role of the nurse expert. Instead, the designer's definition of authenticity was more focused on what was most relevant in context of the students' environmental systems. Figure 18 illustrates the connections between the instructor, students, and designer, their specific lens of examination, and their influences which will be discussed in Chapter Five.

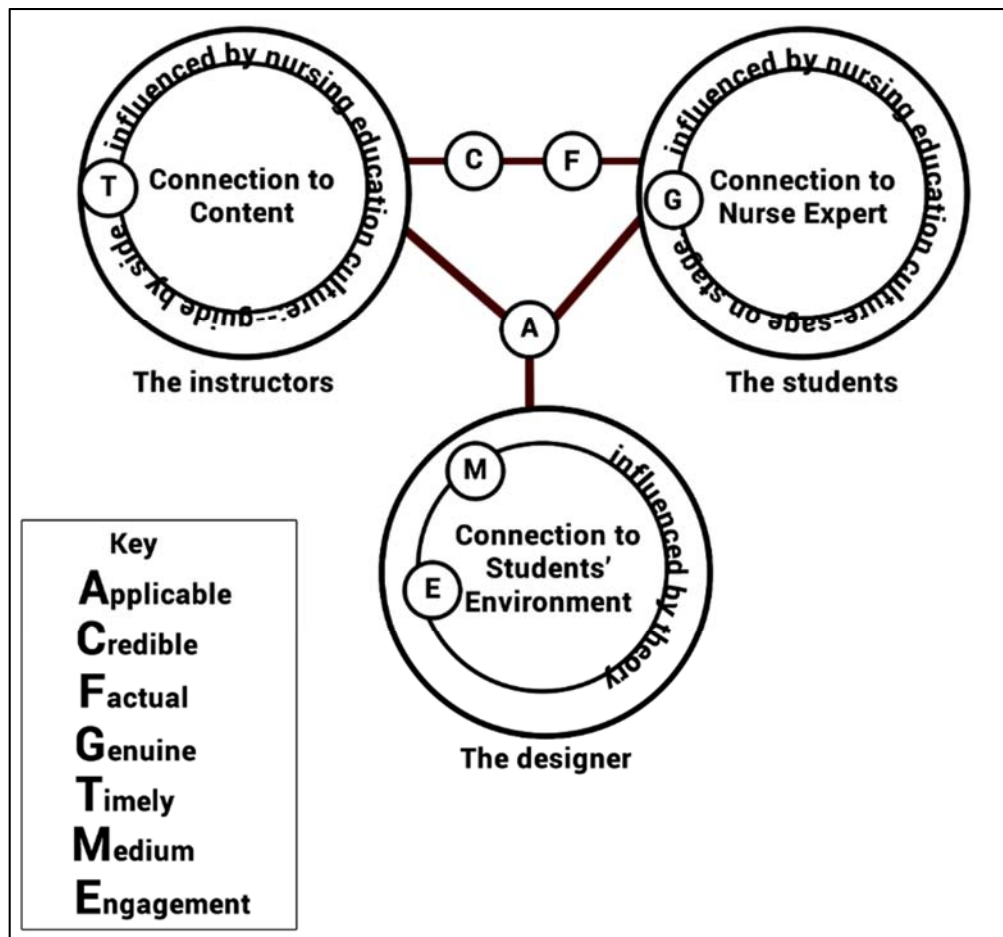


Figure 18. RN-BSN Instructors, RN-BSN Students, and Designer's Definitions of Authenticity through their Lenses and Influences

CHAPTER FIVE: DISCUSSION AND CONCLUSION

The purpose of this study was to investigate the specific multimedia accessed in two online RN-BSN nursing courses, how those resources were used in context of authentic problem-based and project-based learning environments and activities, and benefits and constraints that multimedia offered non-traditional RN-BSN nursing students. The research provided an examination of these questions in context of how the designer, instructor, and students defined authenticity in context of an RN-BSN educational culture. This chapter provides an examination of the findings of the study, its limitations, and the practical and broader theoretical implications. Additionally, multimedia guidelines for the program under study are provided. Finally, the chapter concludes with suggestions for future research.

Examination of Findings

Research Questions 1, 1a, 1b. The findings of this study suggest that the RN-BSN nursing students' used the multimedia in both NURS 242, the problem-based course, and NURS 385, the project-based course, despite the instructors' mixed feelings regarding whether they used the multimedia. Instructors who taught NURS 242 believed that students used the multimedia, while the two instructors who taught NURS 385 did not believe the students used the multimedia. The instructors who taught both classes were mixed as to whether they used multimedia. The reasons instructors believed students used the multimedia in NURS 242 was because they periodically observed them referencing the video perspectives and nurse consultants in their assignment posts.

The main reason instructors doubted students' usage of the multimedia was because students, in general, did not cite the multimedia in their assignments. However, all the students interviewed reported that they did use the multimedia in both NURS 242 and NURS 385 and

their reasons for not citing the multimedia centered on three factors: (1) lack of knowledge of how to cite multimedia, (2) lack of time or effort to cite multimedia, and (3) instructor's specific expectations that discourage citing multimedia in their scholarly references.

The assignment directions in NURS 242 did not direct students to use or cite the multimedia. Likewise, in NURS 385, the students were directed to cite and use their textbook, but not the multimedia. If the students were following the directions for their assignments, it may be unclear to them if they can/should use and cite the multimedia. In addition, some of the instructors articulated their opinion that the multimedia was more of an informal medium and the refereed journal articles and textbooks are what the students should be citing and using in their assignments and not the multimedia.

Analysis of the student artifacts showed that the themes that were identified in NURS 242 (e.g., nursing as a profession, holistic care, the dynamics of nursing, the promotion of health through patient education, and the art and science of nursing) and NURS 385 (e.g., the role of nursing, health care responsibility, and social responsibility) multimedia were also present in the course readings. This was logical given the multimedia was developed by the SME to directly highlight and reinforce the essential concepts that were in the course readings. Thus, based on this, it could not be determined by the examination of the student artifacts how the multimedia influenced students' learning specifically over the course readings in specific individual and team assignments.

While the readings and multimedia both presented alternative viewpoints on nursing as a profession, the video perspectives in NURS 242 presented alternative perspectives on nursing as a profession in a controversial and emotional way. The students seemed to connect with them and then compare their ideas to expert ideas which has been described as a benefit of video

perspectives in past literature (Schwartz et al. 2003). In fact, the students remembered the video perspectives, which may be a result of the interaction between the individual and the environment design. This is supported elsewhere in recent literature where multimedia is used to provide opportunities for students to consider new ideas by taking on new roles within a purposeful environment (Gresalfi & Barab, 2011). The perspective videos were situated within broader learning activities where there was evidence that their thinking was challenged, and in some cases changed, from Week 1 to Week 7. Also, in the students' reflections, they mentioned the benefits of the team assignment in shaping their learning by bringing in multiple perspectives. This was further evidenced by team assignments which had more themes represented in them than in the initial individual posts. These findings align with research that discusses how knowledge is socially distributed (Cole & Engeström, 1993; Lave & Wenger, 1999; Pea, 1993) where technology may support and enhance collective understandings (Parchoma, 2014; Salomon, 1988; Wells, 1996).

Furthermore, this research illustrated how multimedia assists learning and provides scaffolding for learning in two different instructional designs. Specifically, it reinforced the attributes provided by Bonk and Cunningham (1998) in how multimedia can be used to assist students in understanding concepts in context of their projects and supported project completion. The results also reinforced the importance of providing context that is meaningful to the learners specifically (e.g., Barab, et al., 2000; Brown, et al., 1989; Herrington & Oliver, 2000; Herrington, et al.; 2004; Petraglia, 1998a). For example, students reported that the one element that was missing from the multimedia in NURS 385 was some element that brought in the real world relevance and made the connection of how the project relates to their current practice. These insights appeared to connect with the students' views of authenticity which further

supports those who claim there is variability between designers' intentions of what they believe to be authentic to the learners versus what the learners articulate to be authentic to them (e.g., Gulikers, et al., 2005; Herrington, et al., 2003).

In addition, these results also support claims for the importance for building in different forms of engagement where the learners think about how the multimedia tools work and how they were used so they can make applications to practice (Gresalfi & Barab, 2011). For example, there was disconnect between how the multimedia was designed and how the instructors and students reported how the multimedia supported them. The multimedia was designed to provide both directive and divergent supports in NURS 242 and provide more directive supports in NURS 385. These designs were in alignment with the conceptual nature of NURS 242, the problem-based course, and the clinical nature of NURS 385, where they had to work in context of their community to build their projects. Instructors and students had similar views on how multimedia assisted their learning as direct support compared to divergent support, but not necessarily on which types of multimedia in the courses provided this level of support.

For example, instructors felt that multimedia assisted students' learning most by highlighting essential concepts, followed by providing task structuring, and then by providing an overview, but they also recognized that the multimedia provided reinforcement and elaborated on specific concepts. The instructors specifically discussed the nurse consultants and multimedia in general as the types of multimedia that provided the most level of support in highlighting the essential concepts. There was also discussion that the video perspectives, interactive multimedia, and project managers provided direct level of support in highlighting essential concepts.

Students agreed that the multimedia helped them the most by highlighting essential concepts and providing an overview. Similar to the instructors, the students did discuss the nurse

consultants as assisting their learning by highlighting essential concepts but not to the extent of the instructors.

One major difference between the instructors and students was the reported importance of the multimedia in NURS 385 had in assisting learning. While some instructors regarded the interactive project overviews as somewhat important in providing an overview, the students rated this as the most important element in providing them an overview specifically within the context of their projects. Moreover, the students mentioned the static project flow chart as useful in providing an overview of the projects, while the instructors did not mention this. The instructors and students both mentioned the usefulness of video perspectives in providing an overview.

Specific to divergent supports, some of the instructors reported the value of the video perspectives, in assisting learning in challenging students' thinking and engaging students in questioning. There was only one mention by the students in the interviews of the multimedia, specifically the video perspectives, assisting learning through challenging and promoting questioning. Additionally, neither the instructors nor the students mentioned the project managers or nurse consultants in providing divergent supports even though they were designed to provide this type of assistance. Instead, the project managers and nurse consultants were specifically mentioned in context of more direct support.

The lack of student recognition of the value of the multimedia to hold divergent support could be related to their past educational experiences focusing on technical curriculum that is highly-structured with teacher-centered models (Diekelmann, 2002; Giddens & Brady, 2007; Stanley & Dougherty, 2010). Additionally, the RN-BSN nursing students come from a culture of education that focused on covering content instead of consideration of how they are learning (Bevis & Watson, 1989). It is not typical for these nursing students to engage in metacognition or

think about their own thinking (Flavell, 1979) which has been supported in this study. Although the students' thinking appears to have been challenged and changed in NURS 242, as evidenced by their individual and team assignments, it was evident by how they reported how the multimedia assisted their learning that they did not reflect on how they are learning what they are learning. Thus, even though the students did not recognize the multimedia as divergent supports to their learning, it still may provide this level of support. Others discuss in the nursing literature the importance of building metacognitive opportunities to support ongoing reflection (Burke, 2012; Kuiper, 2001) and as Gresalfi and Barab (2011) stated with their multimedia-rich design, "Importantly, these designs do not teach themselves" (p. 308).

Moreover, given that some instructors saw the value of the multimedia in providing more divergent type of support, it may be an indication of the curriculum shifting away from more traditional curricular models (Stanley & Dougherty, 2010). This is a well-documented shift in the nursing education landscape (e.g., Forbes & Hickey, 2009; Lombardi et al., 2013; Mauro et al., 2012; Stanley & Dougherty, 2010). Instructors specifically mentioned the need to engage students in multiple mediums for learning to prepare them for critical thinking in their professional lives, which is a goal stated in the nursing literature (e.g., Benner et al., 2009; Candela, et al., 2006; Lombardi et al., 2013).

Additionally, instructors believed that students may not use the actual multimedia medium at all and may just print the transcripts. Students reported that they found both the multimedia and transcripts mutually beneficial. They did use the multimedia, but also reported using the transcripts based on three factors: (1) time or convenience, (2) to assist them in their learning, and/or (3) to provide accurate citations. Some students printed them for portability, so they could read if they were at a child's event, for example, but still found the graphics useful in

conceptualizing the information. While there is literature describes the non-traditional student as having children (Seidl & Saunter, 1990) and being highly motivated (Wu & Connelly, 1992), this study illustrated the importance of how such factors may bring forth specific curricular needs for non-traditional students and have possible impact on multimedia design. The RN-BSN students used the multimedia in addition to the transcripts and all adamantly agreed that it would be a mistake to remove the multimedia from the courses and/or not to include multimedia in future iterations of the courses.

Analysis of data relevant to the first research question illustrated that multimedia should not be studied in isolation without consideration of the learning context (e.g., Kaptelinin, 2013; Nardi, 1996). In interviews, instructors and students discussed how it was not just the multimedia that influenced their perspectives, but the course readings combined with the team assignments. Students specifically reported that they saw the value of both the multimedia and readings as closely connecting and mutually determining the other in helping with their learning in their assignments. In fact, the instructors and students also reported how the multimedia, readings, and activities within the learning environments altogether supported their learning. These are views that are supported in the literature regarding how knowledge is constructed in the learning environment (Kaptelinin, 2013; Wells, 1999).

Instructors and students noted how the multimedia, readings, and assignments within the learning environments supported their learning. This supports claims in the literature that tools, signs and socially developed artifacts shape or mediate external behavior and influence internalization (Kaptelinin & Nardi, 2012a; Kaptelinin & Nardi, 2012b). There was evidence in student artifacts that the NURS 242 team assignments added an additional peer perspective that built on their individual thinking. Also, the project in NURS 385 provided an anchor for the

students to apply the essential topics that they read about in the readings and were reinforced from the multimedia.

Research Questions 2, 2a, 2b. Even though instructors and students reported the benefits of including both readings and multimedia, it was discussed how the multimedia in general created real world relevance, which, as was also discussed, did not come through the readings alone. The results of question 2b illustrated the importance of the consideration of the external influences that may impact values and reported instructional needs. Words such as genuine, real, valid, credibility, and true were used to describe authenticity between the SME, instructors, and students. For the instructors, SME, and students, the multimedia and different perspectives made the experience “real” to them. This was consistent with the designer’s views that the experience should be real to the students and offer multiple perspectives. The reference to real world relevance and the need for multiple perspectives is consistent with the general characteristics of authentic instruction (Barab et al., 2000; Herrington et al., 2004; Herrington & Oliver, 2000; Petraglia, 1998a; Savery & Duffy, 1995).

A closer examination of these statements suggests that the instructors’, students’, SME’s, and designer’s views were filtered through different lenses that were embedded within broad educational and cultural contexts. Others have described the importance of designing learning environments to take into account context, culture, and authentic activity (Bonk & Cunningham, 1998; Cobb, 1994; Kaptelinin, 2013; Gibson, 1977). It was Petraglia (1998b) who stated that, “...authenticity is not an intrinsic property possessed by an object but rather a judgement, a decision made on the part of the learner constrained by the sociocultural matrix within which he or she operates” (p. 100) and it was Barnas and Zheltoukhova (2014) that urged designers to consider what is authentic practices in context of a particular culture. Thus, to discuss what the

instructors viewed as the most useful and the most essential attributes of multimedia it is necessary to understand their lens for defining authenticity and the culture in which it is embedded (Kaptelinin, 2013).

First, the instructors' claims seemed to be situated through a lens that was centered on a connection with the content, which was embedded within the broader nursing education culture that has shifted from the "sage on the stage" to a more "guide on the side" perspective (e.g., Candela, et al., 2006; Diekelmann, et al., 2005; Ironside, 2001; Ironside, 2004; Ironside & Valiga, 2006; NLN, 2003, 2005; Randell, Tate & Loughheed, 2007; Stanley & Dougherty, 2010). The instructors and SME discussed how students needed to be pushed to engage in critical thinking. The instructors valued having multiple modes of learning tools and pedagogical designs to move students out of their comfort zones, which (according to the instructors) is representative of the skills they will need to have for nurse practice today (e.g., Forbes & Hickey, 2009; Lombardi, Sutphen, & Day, 2013; Mauro, Hickey, McCabe, & Ea, 2012; Stanley & Dougherty, 2010).

The instructors' definition of authenticity focused on the fact that the content of the multimedia should be *timely* and come from *credible* or scholarly sources and also provide information that is *factual*. This lens is associated with to their claims regarding the usefulness of the different types of multimedia. When instructors' discussed relevance, they indicated that the multimedia content was factual, timely, and credible. Any multimedia that was not seen as meeting these criteria were rated as less useful and authentic to the students' learning. The instructors believed the video perspectives were most useful to their students because they provided content that was factual and timely.

The students' definition of authenticity also focused on being *factual*. However, the

students' lens centered on a connection with a nurse expert which was embedded with the broader nursing education culture that has been influenced by their completion of their ADN degree, which more than likely situated in highly structured traditional teacher-centered model of delivery (Diekelmann, 2002, Giddens & Brady, 2007; & Stanley & Dougherty, 2010). Like the instructors, the students wanted content that was *factual* but focused on the fact that it should come from nursing experts. They also wanted the multimedia to be *credible*, meaning that it comes from "real" expert opinion. The focus was not on the content, but where the content comes from. For the RN-BSN online nursing students, they desired a connection with nurses. This connection appears to materialize when the students find the multimedia genuine. When multimedia are presented as *genuine*, they seemed believable, relatable, and for the students-- "true." Therefore, the perspective videos were useful to most of the students because they saw them as genuine. When the students did not find them genuine they did not form the same connection and the multimedia was less believable.

Another example of students' influences by was illustrated in their views of the nurse consultants, which were audio only. The nurse consultants were seen as less useful than the video perspective because the students could not see an actual nurse. This was in alignment with the fact that they desired an actual nurse video over an illustration of the nurse. The students valued the fact that the illustration was different, which engaged them temporarily, but focused on the fact that once the novelty wore off, they wanted to connect with a real nurse. While they would rather watch the nurse consultant as opposed to listening, they still appreciated the "audio only" of the nurse consultants because the audio sounded like an actual nurse and provided factual content.

The attribute of watching the video was identified as important to the students, but

equally important was having access to the transcripts so they could meet the educational requirement. Again, this supports the fact that these are non-traditional students that have been identified as being highly motivated (Wu & Connelly, 1992) and typically have higher grade point averages (Strayer & Beitz, 1990; Youssef & Goodrich, 1996) than traditional students. The RN-BSN students interviewed stated that they are driven by earning higher scores. This was reiterated by instructors who stated that these students are motivated to earn an A. Students did not want to lose points for not citing information correctly.

Still, the differences of views were evident. Some of the instructors reported that the audio only files were more valuable than the videos for students learning because listening allowed students to focus on the content and not get distracted by the video medium. Additionally, the interactive multimedia in NURS 242 was seen by instructors as least useful for students' learning. Their reasons focused on the fact that it lacked details that were necessary for the content. Even though the nursing students also believed the multimedia was least useful to their learning, they appreciated that it provided the reinforcement of the key concepts. However, students also believed the interactive multimedia in NURS 242 was not as genuine as the perspective videos. However, in NURS 385 the students rated the interactive multimedia more useful to their learning than the project managers, which was directly opposite as to how the instructors rated the usefulness of the multimedia in that course. The reason may be explained through the still another lenses that the instructors' and students used to describe authenticity: *applicability* to practice.

While application to practice is often discussed in general with authenticity (e.g., Bednar, Cunningham, Duffy, & Perry, 1992; Duffy, & Cunningham, 1996), students and instructors may differ in education values because of the cultural context and practices they engage (Kaptelinin,

2013; Kaptelinin & Nardi, 2012; Wells, 1999) which may impact views of authenticity (Petraglia, 1998a). For example, RN-BSN nursing students viewed applicability of the multimedia as having value to them in context of the class and/or holding relevance in their practice. The instructors discussed authenticity specific to the content holding application and relevance to practice. However, the instructors did not discuss applicability in terms of holding relevance to assignment or project completion. This could be one reason why the students rated the interactive multimedia higher in NURS 385 than in NURS 242. The students needed the direct supports in assisting them in structuring their projects and understanding the concepts in contexts of their projects which has been widely discussed for project-based learning in general and is not a new in the literature (Barron, Schwartz, Vye, Moore, Petrosino, Zech, & Brandsford, 1998; Blumenfeld, et al., 1991).

Moreover, students and instructors had mixed opinions on the value of having content hidden in the interactive multimedia, such that the student must explore with their computer mouse to get the content. The instructors felt the benefit of providing the rollover was in how it helped highlight content. Students felt it assisted their learning for task structuring, but also had mixed reviews on the usefulness of the hiding, but reported wanting to be able to print the interactivity content in the image format. In other words, instead of having a transcript in text only in some cases, they want to print the content within the formatted image.

Finally, in terms of usefulness of the images, the students reported that color and variety were useful attributes to courses such as NURS 242 and NURS 385 that have a lot of reading because they provided a different level of engagement. However, students had mixed opinions as to the usefulness of illustrations that are drawn within the context of a colorfully formatted image. If the illustration assisted them in their learning, they found it valuable. There was not

evidence provided from this study that the illustrations specifically helped them learn better as was stated by the multimedia principle (Mayer, 2005, 2010) but students did respond positively to the color. Still, instructors noted that the usefulness of illustrations is content-dependent, which was in alignment with their views on how they defined authenticity and is in alignment with more cognitive views for learning where researchers claim the use of graphics is dependent on the type of task (Hannus & Hyona, 1999; Rash & Schnotz, 2009; van Genuchten, et al., 2012). In the end, the students reported that the most important attribute of multimedia was its' authenticity, which was defined as genuine, factual, credible, and applicable with a connection to nurse expert.

The final perspective that was examined as part of the study was how the designer defined authenticity. During this study, as it was stated, the students recalled the perspective videos in NURS 242 and recalled their actual projects in NURS 385. From the designer's perspective, this could be tied to how each of these artifacts aligned to the relevance of their environments. The designer's view of authenticity, which is grounded on Bronfenbrenner's (1979) ecological systems theory, centered on the applicability of the multimedia or activities to the students' immediate environments. In other words, the greater the immediate impact the experience has on the individual's thinking and personal experiences or practice, the more enduring it becomes. Specifically, the designer considered authenticity in terms of the functionality of the different mediums and how they engaged the learners. This is still another lens of viewing applicability that did not align with the students, instructors, or SME's views and illustrates how designers' views do not always align (Herrington et al. 2003; Petraglia, 1998b).

Implications

By investigating the research questions above, this study examined how multimedia guidelines should be considered in context of the audience and cultures which embody them. Both practical and theoretical implications are provided below.

Practical Implications. This study holds immediate implications for the university under study. Specifically, this study illustrated how instructors', students', and the designer's views of authenticity shaped how the usefulness of multimedia was reported and the types of multimedia that is desired in online RN-BSN course designs.

The students were practicing nurses who have completed their ADN degrees and are comfortable with traditional lecture-based formats (Diekelmann, 2002; Huston, 2014). Not surprisingly, this study suggests that they are most comfortable with direct level of support from an expert nurse that connects with them and provides them with what they need to know which aligns with traditional views of nursing education where there is an expert nurse disseminating content (Giddens & Brady, 2007; Stanley & Dougherty, 2010). While the adjunct instructors' views may be influenced by the value of moving students into more learner-centered designs, which is the movement in the nursing literature (e.g., Candela et al., 2006; Diekelmann, et al. 2005; Ironside, 2001; Ironside, 2004; Ironside & Valiga, 2006; NLN, 2003, 2005; Randell, Tate & Lougheed, 2007), they also seemed to bring in their own comfort levels and personal teaching and learning philosophies in reporting how multimedia should be used which has been a challenged described in the past with multimedia-rich environments (Gresalfi & Barab, 2011) and with online teaching (Mitchell & Geva-May, 2009; Stewart, Bachman, & Johnson, 2010) and in classroom teaching in general (Squire, McKinster, Barnett, Leuhmann, & Barab, 2001; Stein, Smith, Henningsen, & Silver, 2000). In particular, instructors in this study made

suggestions that are focused on the content instead of the non-traditional nursing students' needs specifically.

There should be a balance between providing the students what they want and providing them a learning experience that will prepare them for real medical world which has been discussed elsewhere in the nursing education literature (Benner et al., 2010; Billings & Halstead, 2009; Candela et al., 2006). This requires a shift in students valuing an expert nurse who provides them the right answer to considerations of themselves becoming a nurse leader who will problem solve and critically think well after the course completion. It also requires a shift in instructor thinking of the possible value of multimedia and their purpose within the context of different course designs. Thus, the following are recommended multimedia guidelines based on the results of this study. They include building connections through genuine multimedia, creating multimedia of actual nurses for metacognition, and setting clear expectations for multimedia.

Building connections through genuine multimedia. NURS 242 is an example of how to create a messy, ill-structured design where connections are made through genuine multimedia, specifically video perspectives. Students appear to connect with live actors around issues that are immediately applicable to the class and beyond. They see them as actual nurses. They see them as genuine or true. However, when videos that they connect with provide them material that they do not see as credible they experience dissonance. This was evident in this study with Marilyn who discussed that nursing was not a profession. They may no longer see this video as authentic from a credibility standpoint, but they are already vested in the overall problem of how to define nursing and she challenges them. Thus, given the overall connection that has been created through the multimedia, readings, and learning activities during the first week, the stage is set for introducing alternative perspectives that may challenge their thinking such as with the Marilyn

video. There has been discussion that such cognitive conflict can set the stage for learning (De Grave, Boshuizen, & Schmidt, 1996; Savery, 2009; Savery & Duffy, 1995). It is important to structure the problems and projects so that students value what they are learning and become intrinsically motivated to learn (Barrows, 1995; Hemlo-Silver, 2004; Leont'ev, 1987).

It is not that they are provided with the “right” perspectives, but an initial connection should be built so that the RN-BSN students engage in multiple perspectives. This supports discussions in the literature regarding the importance of providing the right amount of scaffolding (Bonk & Cunningham, 1998; Wood et al, 1996) so students can engage in the ill-structured environment within their zone of proximal development (Vygotsky, 1978) and it also takes into account the importance of understanding what is meaningful and relevant to a student in context of the activities and their educational culture (Wells, 1995; 1999). For the RN-BSN student, it appeared that the less hypothetical the perspectives, the more believable they become, and the more the RN-BSN students appear to connect with them which closely aligns to the designers beliefs which were grounded in Bronfenbrenner’s (1979) ecological systems theory where an individual’s world is shaped by those environments that are closest to the individual. It also reinforces the claims of the importance of building connections that are relevant to students’ practice (e.g. Bransford et al, 2000; Brown et al., 1989, Jonassen, 1997; Savery & Duffy, 1995).

In the current course designs, there are a limited number of courses that use actual people that offer a genuine connection for students. For example, in NURS 385 there were no video perspectives, but audio was used. This was done because of the production expense of the videos. However, given the results from this study, additional opportunities to use this type of medium should be considered with actual nurses. It is not that the current multimedia in the program is not valuable, but additional opportunities to bring in actual nurses may be beneficial

to the RN-BSN students. Specifically, this may be a need for this specific population to become intrinsically motivated to learn (Barrows, 1995; Hmelo-Silver, 2004; Leont'ev, 1987).

Creating multimedia of actual nurses for metacognition. In problem-based and project-based learning experiences, students are immersed in the ill-structured learning experience (Hmelo-Silver, 2004; Savery, 2006; Savery & Duffy, 1995) which has been historically been described as an uncomfortable environment for the general medical and nursing student (Barrows, 2000; Heliker, 1994; Garbett, 1996) and given the RN-BSN students' educational culture it may be even more so (Giddens & Brady, 2007; Stanley & Dougherty, 2010). In these courses, it is not until the end of the experience that the students realize how the problem or project comes together (Anderson, Tredway, & Calice, 2015). Going through that uncomfortableness is part of the ill-structured learning experience (Hmelo-Silver, 2004; Savery & Duffy, 1995). In many problem-based or project-based experiences, there is a period of debriefing that includes students thinking about the experience they went through and additionally how their thinking may have been challenged or changed (Gresalfi & Barab, 2011; Hmelo-Silver, 2004, 2006; Savery, 2006; Schoenfeld, 1985; 1998). As Hmelo-Silver (2004) stated, "Metacognitive strategies are also important for the third goal of developing self-directed, lifelong learning skills. These are the skills that enable autonomous learning" (p. 240).

There may be room for improvements in the RN-BSN courses based on results of this research. For example, in NURS 242, there were questions in their reflections each week that had them to consider what interested, surprised them, or frustrated them during the week. Additionally, in their final reflection they considered how the course changed their nursing practice. There were opportunities in NURS 242 for students to reflect on the experience which provided this type of debriefing. Nonetheless, NURS 242 and NURS 385 could be enhanced by

different types of multimedia that provide metacognition. First, specific to wrapping up the experiences, the courses could be enhanced by multimedia of an actual nurse educator presented as part of the wrap up. Uses of actual nurses should include names and titles to build credibility. The goal of the wrap-up video would be for the students to begin to build a connection of why they are being challenged in these ways and move them make considerations of how this impacts them moving ahead in the program and the broader implications to their practice. However, instead of telling them in a lecture format, it would provide a debrief and a set of questions for them to consider as they move forward.

Secondly, given the project nature of NURS 385, it would be beneficial to create an introduction video of an actual instructor of the program giving the message of why the students are being engaged in the project and how it has immediate application to the program and to their practice. Additional actual nurses' perspectives that use the process in their own practice could be included to make the instructor's perspective more truthful and genuine. This practice would provide them opportunities to reflect not only what they are learning, but also how they are learning in context of a project. This method could be replicated to other courses where actual nurse videos are used to carry the questioning and enduring themes, such as nursing as a profession and critical thinking, across the program.

Setting clear expectations for multimedia. Some instructors did not see the multimedia as scholarly and took off points for students referencing it, even though the content came from an academic source. This seemed to create disconnect for the students if they should or could cite the multimedia. Nonetheless, the content that the instructors' valued was situated within the multimedia in a divergent way within the learning context, even though they did not necessarily recognize it as such. There are those that have urged the value of instructors working towards

understanding the situated perspective for learning to fully promote and support discourse (Greeno, 1998). Expectations need to be set for instructors of the importance they hold in recognizing how students are learning within these situated problem-based and project-based contexts to promote learning (Collins, Brown, & Newman, 1989; 1989; Greeno, 1998; Hmelo-Silver, 2006). Having students reflecting on their learning may provide additional insight for training purposes.

Further, a deeper integration between the context and students' views of authenticity may encourage students in citing the multimedia. For example, it has been discussed in the literature the importance of closely situating activities in authentic contexts (Greeno, 1997; Lave & Wenger, 1991; Resnick, 1987). With the video perspectives, for example, there seemed to be a closer connection between students' views of authenticity, the assignment, and the video perspectives compared to their views of authenticity, the project, and the project manager audios. This understanding of authenticity and context may assist with multimedia redesign and help promote student citations of the multimedia.

Also, if the desire was to have students citing the multimedia, then the actual citations for the multimedia should be provided directly with the multimedia. The actual citation not only provides assistance for the students, saves them time, but may lend credibility from an instructors' perspective.

Theoretical Implications. In addition to the practical application, this study holds broader theoretical implications. The results support the literature that discusses the variability between designers' intentions of what they believe to be authentic when developing instruction compared to what learners believe to be authentic (e.g., Gulikers, et al. 2005; Herrington, et al. 2003). Additionally, it builds on this literature by illustrating that authenticity is defined differently by

instructors. This finding holds implications for instructional designers to be aware that their own definitions of authenticity may not align with the instructors (Herrington et al. 2003; Petraglia, 1998b). While there are guidelines widely used in the literature for creating authentic activities generally (e.g., Herrington et al., 2004; Jonassen, 1999), designers should not make assumptions that the SME is starting from the same operationalized definition. This study further adds validity to the literature that evaluates authenticity through the exploration of the learner, the activities, and their environment (e.g., Barab et al., 2000; Herrington & Oliver, 2000).

Additionally, this study reinforces the importance of the external and internal influences in not only understanding the learning context (Kaptelinin et al., 1999), but also for designing instruction. It illustrated how the RN-BSN learning experiences are situated and tied to context, culture, and authentic activity (Cobb, 1997; Gibson, 1997) and how the multimedia tools and readings in context of the learning activities together shaped learning and influence internalization which has been discussed in sociocultural literature (Kaptelinin & Nardi, 2012a; Kaptelinin & Nardi, 2012b). Thus, these results support why understanding an audience specifically within the context of the learning experiences, their cultural influences, and the tools that mediate the experience need to be considered when proposing guidelines that mediate how people learn (Cobb, 1994; Wertsch, 1998).

This outcome holds implications specifically for Mayer's (2005, 2010) evidence-based techniques for multimedia learning and supports the claim of adding multiple views of learning to support design practices (Hannafin & Hill, 2007; Steiner, 1988). When the results are examined from a more sociocultural perspective, it brings to light the need to broaden the focus from the fixed attribute of the learner to the interactive space between the learner, their culture, and the activity settings to support them within their Zone of Proximal Development (ZPD)

(Wells, 1995; 1999). By understanding what is meaningful and relevant to the specific students in context of their external influences within different pedagogical designs, designers may be able to better provide an experience that meets students within their ZPD (Salomon, 1988; Wells, 1999). For example, by examining how RN-BS students defined authenticity and how they reported usefulness of the multimedia in different designs, modifications can be made to improve their overall learning experience. Specifically, results from this study can be used to design multimedia as hard scaffolds (Brush & Saye, 2002) to bring in authenticity for the RN-BSN students in more project-based designs. Also, with a broader understanding of their specific requirements for authenticity, the designer and instructor can focus on the most appropriate medium for engagement for them specifically within context of the goals of the learning experience.

The social and cultural space in which the individual is embedded is part of understanding learning (Tudge & Rogoff, 1989). This study supported the fact that both the external and internal conditions are closely connected and mutually determine the other (Kaptelinin, 2013). Examining learning from this perspective may provide a broader understanding of what types of supports are necessary for a specific population, like RN-BSN students, to be able to function within their ZPD.

Limitation of Study

Limitations are external conditions that impact the study's scope (Creswell, 2003). This study was restricted to one Midwestern university online RN-BSN nursing program and focused on one section of two courses. The study investigated two specific course designs: a problem-based design with conceptual content and project-based design with clinical content. As such, the findings may be more applicable to similar online RN-BSN nursing programs with similar

focus and pedagogical designs.

Moreover, nursing students and instructors, who were the focus of the study, already possess foundational knowledge and work experience which begets an awareness of their specific educational needs (Morris & Faulk, 2007). The nurses specific to this online RN-BSN program were returning to school to obtain a bachelor's degree to advance their own education. Thus, the non-traditional nursing students in this study brought a unique perspective to their needs to the learning experience. Therefore, the nursing students' feedback may not be typical of a student who is entering into an online program. Additionally, of the instructors who were interviewed, only one of them was a full-time university employee. The rest of the instructors are nurse practitioners. Thus, the insights that the participants brought may not be typical to all online programs and to all online nurse programs.

Also, it is important to identify any potential biases that may influence outcomes (Hendricks, 2009). First, the researcher provides online technical support as needed for both instructors and students in the RN-BSN online program. All of the instructors who participated in the study had received support from the researcher. However, none of the students who were interviewed had received support from the researcher. This was their first contact with her. The researcher acknowledges that the prior relationships with the instructors may have influenced their agreement for participation. To mitigate such influence, the researcher sent an email with a research information sheet and a consent form. In the consent form, it stated that the participation in the study was completely voluntary and would hold no bearing on the level of support they received in the program. Additionally, the researcher reiterated that their participation was optional and they could skip any questions at any time. Additionally, they had the option to stop the interview at any point. The researcher wanted it to be clear that the

research was about improvement of the online program and held no bearing on services provided.

Moreover, the sample size of was of this study is relatively small; NURS 242 that had 16 students who completed the course and one section of NURS 385 that had 20 students who completed the course. Moreover, there were 5 students and 6 instructors who completed the interviews. There were a total of 157 submissions from the students that were collected from NURS 242 and 303 from NURS 385. The goal of this research is not to generalize the findings but to inform practice for this specific program.

Suggestions for Further Research

This study recommended multimedia guidelines for an RN-BSN online program. There are future studies that could be replicated to validate and extend the results of this research.

Below is a list of suggestions for further research.

1. A larger sample size and more interviews would provide additional validation to the results of this study if the study was replicated. This study focused on one section of each course and included 16 students in NURS 242 and 20 students in NURS 385. It also included 6 instructor interviews and 5 student interviews. Adding more student interviews would add strength to the claims of the study. All but one of the instructor who teach these courses did participate in the study.
2. In this study, students did not know why they preferred graphics to text. These results supported Mayer's (2005, 2010) multimedia principle from a cognitive view point that states students prefer graphics to text alone. Further research with additional RN-BSN students focusing on graphics verses text specifically could be conducted to determine why RN-BSN students prefer graphics to text for their learning.

3. Investigating additional course designs such as a case-base design that includes video perspectives could add additional perspectives as to what aspects of different types of videos that have nurses do students' view as genuine. For example, there is a case-based designed course that includes actual nurses performing patient exams from a publisher and a video cases with actors doing that build a story throughout the course and tie in with the student assignments. Comparisons could be made between the two types of videos in the context of the design and activities to explore specifically what the students' value between the two types of videos and how they support their learning.
4. A study focus could be implementing actual nurse videos in NURS 385 that are more divergent than direct as a hard support (Brush & Saye, 2002) to build authenticity. Then, this study could be replicated specifically for this course to see how students view the usefulness of the multimedia and authenticity with the added divergent supports.
5. Finally, this study could be replicated outside of higher education in other industries with nurses and beyond to add to our understanding of what types of multimedia adults find as useful with a specific interest in external influences. Multimedia is used in many industries so there is a wide array of possibilities that may be examined. For example, nurses in a hospital that have taken a diabetes training have reporting multimedia that have interactive rollovers more useful than providing text all at once. This is different than what the RN-BSN students reported. Exploring possible differences between subcultures will assist with knowing what attributes of multimedia are shared.

Conclusion

Results suggested that RN-BSN nursing students' used the multimedia in both NURS 242 the problem-based course and NURS 385 the project-based course. Students reported that the

multimedia assisted their learning the most by highlighting the essential concepts, providing an overview, task structuring, reinforcement, and elaborating. Students also recognized that they used the multimedia in the courses for clarifying, questioning, and challenging. The perspective videos were the most useful multimedia reported by student in NURS 242 and the interactive multimedia that assisted with project completion were reported to be most useful to students in NURS 385.

The nursing students reported that multimedia that are genuine, factual, credible, and applicable to the course and beyond as most useful to their learning. Students and instructors reported that both the multimedia and readings are tools that shape student thinking in context of their individual and team assignments and together it influences internalization. Multimedia brings in a real world relevance that the readings cannot provide to the students. The findings suggest that instructors, students, and the designer bring external influences that impact their values and reported instructional needs. Consequently, the results of this study are important by providing suggested multimedia guidelines that could possibly improve online course designs for the RN-BSN students while also illustrating the importance of understanding the specific culture of the audience to which multimedia is designed.

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APPENDIX A
NURS 242 WEEK 1 INDIVIDUAL REIVEW AND REFLECT QUESTIONS

Do you think you or your work site would benefit from guiding nursing practice by a nursing theory? If so, which one would you use? If not, why?

What is your view of the need for a definition of nursing? Do you think it is a problem or not?

Does your team's definition of nursing sound like your experience as a nurse so far, or of what you have imagined your nursing career will be like? In what way; or what's different?

As you think about "what is nursing", Read the following quote which is from the assigned reading from the IOM report, Future of Nursing: Leading Change, Advancing Health, and comment on what it perceives nursing to be.

"care management and coordination, patient education, public health intervention, and transitional care are likely to dominate in a reformed health care system as it inevitably moves toward an emphasis on prevention and management rather than acute care (O'Neal.2009)" (IOM Report, Future of Nursing, Key Messages, page 24).

What surprised/interested/frustrated you about this Week?

APPENDIX B

NURS 242 WEEK 7 INDIVIDUAL REIVEW AND REFLECT QUESTIONS

Are you convinced that nursing has a problem because we do not articulate well what it is that we are, over what it is that we do? Why or why not?

Are you convinced that health rather than illness is or should be the focus of nursing?

Has this course changed your nursing practice? If so, in what way? If not, why do you think that is? Were you expecting something else?

Do you think that health care reform and the ideas expressed in the IOM Future of Nursing: Leading Change, Advancing Health report will change nursing? Is so, how? If not, are you glad or discouraged by that? Briefly explain.

What surprised/interested/frustrated you about this course?

APPENDIX C

NURSE 385 ACTIVITY DIRECTIONS

Project 3 Team Content Discussion Directions

1. If you haven't already read the assigned chapter in your textbook regarding Cultural Diversity in the Community (in the 8th edition, Chapter 7), then do so now.
2. Answer the Content Discussion questions given below on your team discussion board, Project 3 Content Discussion.
3. Remember that the rubric for this assignment calls for you to use critical thinking (analysis, synthesis, application, etc.); the best way to show you are doing that is to bring in ideas, thoughts, or concepts from your assigned readings, or other outside resources.
4. In addition, to your original submission, you must make a well-developed substantive (i.e. has substance), meaningful comment on at least two of your teammate's postings.
 - Meaningful comments require some thinking and analysis on your part. For example: look for and describe ideas that are common among various students' comments; or ones that are different; or ones that present a view in a way you had not considered; or share information about how someone's comment is the same or different from what you have experienced in the workplace.
 - Phrases like "I agree" or "That's Right!!", though acceptable, do not by themselves constitute the thinking and analysis intended by the words "Meaningful Comment"
5. In these discussion assignments, you are not just "chatting" about what you all think or feel. You are adding perspective, content, and knowledge to one another's thinking. That takes some work on your part and will likely mean that you draw from resources to support your comments.
6. One last point; well developed, substantive, and meaningful doesn't necessarily mean long. If you can articulate your thoughts in a few sentences that is fine.
7. When you use outside resources beyond the assigned readings, be sure to cite and reference them using APA format.
8. This assignment is worth 20 points. You will be graded using the discussion rubric. Check the Course Information, Grading rubrics for specific details on grading.
9. This discussion will be moderated, so you will not be able to see other students' initial posts until shortly after the due date and time, at which point the discussion will be opened for comment and responses.
10. Be cognizant of time management for this assignment. You will need to do some reading and check your Core assessment data before you can answer the initial questions, your responses will take some development of thought, and you will have other assignments going on at the same time. Plan accordingly.

Project 3 Task Planning, Implementation, & Evaluation Directions

You have completed a community assessment and analyzed and diagnosed community concerns and/or conditions. It is now time to act upon your findings by completing the final steps of the nursing process. In this task you will plan a health promotion intervention and develop the material necessary for its implementation; then you will either present the health promotion intervention yourself, resource and train someone to do it, or turn over materials to your selected CHN or agency who can use them; finally, you will develop a method for evaluating the outcomes of the health promotion intervention.

In addition, you will present a copy of all your work from assessment all the way through evaluation in a final presentation document for viewing by all others.

Because the planning, implementing, and evaluating of a Health Promotion Intervention takes time and organization, a framework of breaking the tasks of planning, implementing, and evaluating down into weeks 5, 6, and 7 is presented. However, please understand that there is a great deal of overlap week to week regarding when assignments should be started and when they are due (it is because of this type of overlap that this course is presented as three “Projects”, rather than 7 specific weeks). Be sure to pay close attention to the Course Calendar for all the assignments due in Project 3.

Project 3 Individual Review and Reflect

Investigate the following and write it up in your blog.

1. Throughout this course you have been communicating and collaborating with a CHN. If you haven't already done so, read the chapter in the textbook describing the type of CHN with whom you have been working (possible chapters include 22, 27, 28, or Chapters 39-46). In addition, if your selected CHN happens to work with a particular Vulnerable Population, then read the chapter in your text that describes that population (possible chapters include 32-38).
2. Next, scan any type of media source (your text, newspaper, radio, TV, internet; or interview your selected CHN) to identify a local, state, or federal health policy, debate, or issue being discussed which would affect the identified community health nurse's role or practice.
3. Briefly describe the health policy, debate, or issue being discussed.
4. Be sure to describe the pros and cons of the policy.
5. Specifically identify if the policy has ethical aspects, cultural aspects, or legal aspects.
6. Check with your selected CHN and other resources to see if nursing has an opinion on the policy and describe that.
7. You will need to check outside resources to find the nursing profession's views on the topic. Your text or Nursingworld.org (ANA website) might be helpful. Be sure to cite and reference outside resources.
8. In addition, the professional nursing organization of the specialty area of your selected CHN will likely have view on the policy. You can check their website and sources also.

APPENDIX D
IRB APPROVED RECRUITMENT EMAILS
FOR STUDENTS AND INSTRUCTORS

SUBJECT: An Invitation to Participate in Research Study for RN-BSN Online Program

Dear [school removed] RN-BSN Student,

This is an invitation to participate in a research study that explores student experiences with multimedia in NURS 385 and NURS 242. I am contacting all students who have completed NURS 242 and NURS 385 to participate in a study. This study is completely voluntary. I am sending this letter on behalf of Gina Anderson, the instructional designer and technical support staff for the [SCHOOL REMOVED] RN-BSN online nursing degree, who will be conducting this research. She is gathering information as part of a research project she is conducting in fulfillment of requirements for completing a doctorate in Instructional Systems Technology from Indiana University. In addition, results from this research will be used by [SCHOOL REMOVED] College of Nursing and [SCHOOL REMOVED] Online to improve the RN-BSN online nursing program and the learning experience for students in that program. I am requesting your voluntary participation in this information gathering on her behalf. Volunteers will participate in an interview session conducted by Gina Anderson. The interview will take place in the next couple of weeks at a time that is convenient to you, and will be conducted using Skype, a free online conferencing tool. If you do not already have Skype on your computer, you will be asked to download it. Technical assistance to do that will be provided if needed. The interview should take about 40-60 minutes. The interviews will be recorded but you will have a choice whether to have just the audio recorded or have the video recorded as well. Gina will discuss your uses of multimedia in these two courses and what aspects of multimedia you found most and least useful to you. The interview will be confidential.

If you are willing to participate, please click on this link to get further information regarding the interview process, and then complete the electronic Informed Consent included, [https://\[school removed\].qualtrics.com/SE/?SID=SV_0pIdn5Z2uEe5dIN](https://[school removed].qualtrics.com/SE/?SID=SV_0pIdn5Z2uEe5dIN)

You will be asked your name, preferred contact email, and preferred times for an interview. If you agree to participate, which is indicated by submitting the form, Gina will follow up with you regarding the interview scheduling within a week.

If you have any questions about the study or procedures, please contact Gina Anderson at gina@mopi16.com. Thank you in advance,

Dear [SCHOOL REMOVED] RN-BSN Instructor,

I am contacting all instructors who have taught NURS 242 and/or NURS 385 and who currently teach in the [SCHOOL REMOVED] RN-BSN Completion Degree program to learn about your experiences with and perceptions of the multimedia in those courses. You might recognize my name but do not let that influence your decision to participate. This study is completely voluntary. I am Gina Anderson, instructional designer and instructor and technical support staff for the [SCHOOL REMOVED] RN-BSN online nursing degree. I am gathering information as part of a research project I am conducting in fulfillment of requirements for completing a doctorate in Instructional Systems Technology from Indiana University. In addition, results from this research will be used by [SCHOOL REMOVED] College of Nursing and [SCHOOL REMOVED] Online to improve the RN-BSN online nursing program and the learning experience for students in that program.

I am requesting your voluntary participation in this information gathering. Volunteers will participate in an interview session conducted by me. The interview will take place in the next couple of weeks at a time that is convenient to you, and will be conducted using Skype, a free online conferencing tool. If you do not already have Skype on your computer, you will be asked to download it. Technical assistance to do that will be provided if needed. The interview should take about 40-60 minutes. The interviews will be recorded but you will have a choice whether to have just the audio recorded or have the video recorded as well. We will discuss your perception of the students' use of multimedia in the courses and what aspects of multimedia you think is most useful to them. The interview will be confidential.

If you are willing to participate, please click on this link to get further information regarding the interview process, and then complete the electronic Informed Consent included, [https://\[school removed\].qualtrics.com/SE/?SID=SV_00Yq4IzR3ltc5Sd](https://[school removed].qualtrics.com/SE/?SID=SV_00Yq4IzR3ltc5Sd)

You will be asked your name, preferred contact email, and preferred times for an interview. If you agree to participate, which is indicated by submitting the form, I will follow up with you regarding the interview scheduling within a week.

If you have any questions about the study or procedures, please contact me at gina@mopi16.com
Thank you in advance,

APPENDIX E

IRB APPROVED CONSENT FORMS FOR STUDENTS AND INSTRUCTORS

Student Research Information and Consent for Participation in Social Behavioral Research

An exploration of multimedia use in an online RN-BSN nursing degree program

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator(s) Name and Title:

Thomas Brush, PhD

IU Professor & Chair, Instructional Systems Technology

Gina Anderson

IU Doctorate Student [school information removed]

Why am I being asked?

You are being asked to be a subject in a research study to explore the benefits and constraints of multimedia used by nursing students in the [school removed] Online RN-BSN nursing degree program in two different online nursing courses (NURS 242 and NURS 385).

You have been asked to participate in the research because you are at least 18 years old and a current student and have completed NURS 242 and NURS 385.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the [school removed]. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 20 students and 11 instructors will be involved in this research [school removed]

What is the purpose of this research?

The proposed design is an action research study aimed to understand how students use of multimedia in online courses so to improve the way multimedia is implemented. The researcher is gathering information as part of a research project she is conducting in fulfillment of requirements for completing a doctorate in Instructional Systems Technology from Indiana University. Specifically, this study will focus on RN-BSN nursing students who, as part of this 9 course program, completed 2 specific courses: NURS 242 Concepts and Processes for Contemporary Nursing and NURS 385 Concepts and Processes in Population-Focused Nursing. The following research questions will guide the researcher's inquiry:

- What multimedia do online nursing students use within the online courses and in what ways do they use it within the context of online learning activities?
- How does the use of multimedia by nursing students differ between an online project-based learning course and an online problem-based learning course?
- What aspects of multimedia do online nursing students perceive as most useful to them.

What procedures are involved?

This research will happen virtually in an individual private session through the free online conferencing tool Skype, <http://www.skype.com/en/>. If you do not already have Skype on your computer, you will be asked to download it. Technical assistance to do that will be provided if needed.

Participants have the choice to participate in an audio-only individual interview or a video only individual interview. There will be 1 interview session which will last between 40 and 60 minutes. It could be possible that participants are contacted after the interviews for clarification or follow up questions.

Interviews will be recorded into mp4 format. Transcripts will be generated from the videos and/or audio to ensure accuracy. These mp4 recordings will be used only during the research period by the researcher and will be destroyed after the study is complete. Video recordings may include replaying them to watch body language and

expressions in regards to specific statements about multimedia.

Transcripts and videos will not include any participant identifiers. The transcripts and videos will be coded using alphabet characters. Participant videos and audio recordings, identifiers, names and emails, which are associated with the codes will be contained on an USB flash drive that is password encrypted so that only the investigator that knows the password can access it. The only identifiers that will be retained for the period of this study will be emails and names so participants can be contacted if clarification is needed for the interviews.

Questions will be asked about your use of multimedia in NURS 242 and NURS 385, your own personal opinions about the multimedia, and how the use has impacted or did not impact your learning experience.

What are the potential risks and discomforts?

There are minimal risks with this project. Given that there will be mp4s produced the researcher will be able to identify a person with the transcript. Though the researcher is involved with technical support in the [school removed] RN-BSN program, participation or lack of participation will not impact any services you receive within the program.

Moreover, given the investigator's role in technical support, you may have had contact with the investigator in the past. Even though you may have interacted with the investigator in the past via technical support, you should not feel any obligation or pressure to participate. Your decision to participate will not impact any future technical support or service, nor will it impact any current or future relationship with the investigator. Participation is fully voluntary and you should not feel any undue pressure to participate in this study.

Additionally, statements made during this interview may be used for final reports and publications. However, your name will not be used in conjunction with any quote. While it is possible, but unlikely, that a statement used may be identifiable by classmates or colleagues who read the publications, the researcher will make every effort to exclude statements in any publications that have potential of compromising anonymity. Embarrassment may occur from something that you might say during the course of the interview, but interactions will be limited to only the researcher and no names or images will be used in any report or publication of the research. No images from the videos will be used for this research project.

Taking part in this study is voluntary. You are free to stop the interview or skip a question at any time. You can choose whether you participate in a video interview or an audio only recording and you are allowed at any time to change your mind about the interview method used for any reason.

If an interview is stopped, the researcher will not save the interview and it will not be used in the study. Leaving the study will not result in any penalty or loss of benefits that you are entitled to within the program. Your decision whether or not to participate in this study will not affect your current or future relations within the RN-BSN online program.

Are there benefits to taking part in the research?

This study is not designed to benefit you directly. This study is designed to contribute to our knowledge of the uses of multimedia in the RN-BSN online program. The study results may be used to help other students in the future.

What other options are there?

You have the option to not participate in this study.

What about privacy and confidentiality?

The only person who will know that you are a research subject is the investigator. Otherwise information about you will only be disclosed to others with your written permission, or if necessary to protect your rights or welfare (for example, if you are injured and need emergency care or when the [school removed] for the Protection of Research Subjects or IU Human Subjects Office monitors the research or consent process) or if required by law.

Study information which identifies you and the consent form submitted by you may be looked at and/or copied for checking up on the research by: [school removed] Auditors; IU Institutional Review Board.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. Video and audio tapes will only be available to the researcher and used for analysis. They will not be used outside of the research study and all audio, video, and transcript files will be destroyed at the

completion of the study. It is your right to review the audio or videos from the researcher. Your name and email will not be included with the video, transcript, and audio materials. They will have a unique code.

What are the costs for participating in this research?

There are no costs to you for participating in this research.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent by contacting the researcher and discontinuing participation at any time without penalty.

The Researchers also have the right to stop your participation in this study without your consent if:

They believe it is in your best interests.

There is reason to believe you are providing false or disingenuous information.

Who should I contact if I have questions?

Contact the researcher, Gina Anderson at gina@mopi16.com if you have any questions about this study or your part in it or if you have concerns or complaints about the research.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the [school removed] or the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949 or via email at irb@iu.edu.

What if I am a [school removed] student?

You may choose not to participate or to stop your participation in this research at any time. This will not affect your class standing or grades at [school removed]. The researcher may also end your participation in the research. If this happens, your class standing or grades will not be affected. You will not be offered or receive any special consideration if you participate in this research.

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

[\[Click Continue to Indicate Your Consent to Participate\]](#) [\[Continue\]](#)

Instructor Research Information and Consent for Participation in Social Behavioral Research

An exploration of multimedia use in an online RN-BSN nursing degree program

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator(s) Name and Title:

Thomas Brush, PhD

IU Professor & Chair, Instructional Systems Technology

Gina Anderson

IU Doctorate Student

[school removed]

Why am I being asked?

You are being asked to be a subject in a research study to explore the benefits and constraints of multimedia used by nursing students in the [school removed] Online RN-BSN nursing degree program in two different online nursing courses (NURS 242 and NURS 385).

You have been asked to participate in the research because you are or have been an instructor of NURS 242 or NURS 385.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the [school removed]. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Approximately 20 students and 11 instructors will be involved in this research at [school removed].

What is the purpose of this research?

The proposed design is an action research study aimed to understand how students use of multimedia in online courses so to improve the way multimedia is implemented. The researcher is gathering information as part of a research project she is conducting in fulfillment of requirements for completing a doctorate in Instructional Systems Technology from Indiana University. Specifically, this study will focus on RN-BSN nursing students who, as part of this 9 course program, completed 2 specific courses: NURS 242 Concepts and Processes for Contemporary Nursing and NURS 385 Concepts and Processes in Population-Focused Nursing. The following research questions will guide the researcher's inquiry:

- What multimedia do online nursing students use within the online courses and in what ways do they use it within the context of online learning activities?
- How does the use of multimedia by nursing students differ between an online project-based learning course and an online problem-based learning course?
- What aspects of multimedia do online nursing students perceive as most useful to them?

What procedures are involved?

This research will happen virtually in an individual private session through the free online conferencing tool Skype, <http://www.skype.com/en/>. If you do not already have Skype on your computer, you will be asked to download it. Technical assistance to do that will be provided if needed.

Participants have the choice to participate in an audio-only individual interview or a video only individual interview. There will be 1 interview session which will last between 40 and 60 minutes. It could be possible that participants are contacted after the interviews for clarification or follow up questions.

Interviews will be recorded into mp4 format. Transcripts will be generated from the videos and/or audio to ensure accuracy. These mp4 recordings will be used only during the research period by the researcher and will be destroyed after the study is complete. Video recordings may include replaying them to watch body language and expressions in regards to specific statements about multimedia.

Transcripts and videos will not include any participant identifiers. The transcripts and videos will be coded using alphabet characters. Participant videos and audio recordings, identifiers, names and emails, which are associated

with the codes will be contained on a USB flash drive that is password encrypted so that only the investigator that knows the password can access it. The only identifiers that will be retained for the period of this study will be emails and names so participants can be contacted if clarification is needed for the interviews.

Questions will be asked about your use of multimedia in NURS 242 and NURS 385, your own personal opinions about the multimedia, and how the use has impacted or did not impact your learning experience.

What are the potential risks and discomforts?

There are minimal risks with this project. Given that there will be mp4s produced the researcher will be able to identify a person with the transcript. Though the researcher is involved with technical support in the [school removed] RN-BSN program, participation or lack of participation will not impact any services you receive within the program.

Moreover, given the investigator's role in technical support, you may personally know the investigator. Even if the investigator is known to you, you should not feel any obligation or pressure to participate. Your decision to participate will not impact any future technical support or service, nor will it impact any current or future relationship with the investigator. Participation is fully voluntary and you should not feel any undue pressure to participate in this study.

Additionally, statements made during this interview may be used for final reports and publications. However, your name will not be used in conjunction with any quote. While it is possible, but unlikely, that a statement used may be identifiable by classmates or colleagues who read the publications, the researcher will make every effort to exclude statements in any publications that have potential of compromising anonymity. Embarrassment may occur from something that you might say during the course of the interview, but interactions will be limited to only the researcher and no names or images will be used in any report or publication of the research. No images from the videos will be used for this research project.

Taking part in this study is voluntary. You are free to stop the interview or skip a question at any time. You can choose whether you participate in a video interview or an audio only recording and you are allowed at any time to change your mind about the interview method used for any reason.

If an interview is stopped, the researcher will not save the interview and it will not be used in the study. Leaving the study will not result in any penalty or loss of benefits that you are entitled to within the program. Your decision whether or not to participate in this study will not affect your current or future relations within the RN-BSN online program.

Are there benefits to taking part in the research?

This study is not designed to benefit you directly. This study is designed to contribute to our knowledge of the uses of multimedia in the RN-BSN online program. The study results may be used to help other students in the future.

What other options are there?

You have the option to not participate in this study.

What about privacy and confidentiality?

The only person who will know that you are a research subject is the investigator. Otherwise information about you will only be disclosed to others with your written permission, or if necessary to protect your rights or welfare (for example, if you are injured and need emergency care or when the [school removed] C Office for the Protection of Research Subjects or IU Human Subjects Office monitors the research or consent process) or if required by law. Study information which identifies you and the consent form submitted by you may be looked at and/or copied for checking up on the research by: [school removed]; IU Institutional Review Board.

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. Video and audio tapes will only be available to the researcher and used for analysis. They will not be used outside of the research study and all audio, video, and transcript files will be destroyed at the completion of the study. It is your right to review the audio or videos from the researcher. Your name and email will not be included with the video, transcript, and audio materials. They will have a unique code.

What are the costs for participating in this research?

There are no costs to you for participating in this research.

Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent by contacting the researcher and discontinuing participation at any time without penalty.

The Researchers also have the right to stop your participation in this study without your consent if:
They believe it is in your best interests.

There is reason to believe you are providing false or disingenuous information.

Who should I contact if I have questions?

Contact the researcher, Gina Anderson at gina@mopi16.com if you have any questions about this study or your part in it or if you have concerns or complaints about the research.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the [school removed] or the IU Human Subjects Office at (812) 856-4242 or (800) 696-2949 or via email at irb@iu.edu.

What if I am a [school removed] employee?

Your participation in this research is in no way a part of your university duties, and your refusal to participate will not in any way affect your employment with the university, or the benefits, privileges, or opportunities associated with your employment at [school removed]. You will not be offered or receive any special consideration if you participate in this research.

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

[\[Click Continue to Indicate Your Consent to Participate\]](#) [\[Continue\]](#)

APPENDIX F

IRB APPROVED VERBAL SCRIPT FOR STUDENTS AND INSTRUCTORS

Student Script

This research is specifically about your use of multimedia in NURS 242 Concepts and Processes in Contemporary Nursing, the second course in the program and the one in which you investigated “What is Nursing?”; and NURS 385 Concepts and Processes in Population Focused Nursing, your third or fourth course and the one in which you studied community health. I am interested in your experiences with the multimedia in the courses and which aspects of the multimedia you perceive as useful or not.

For purposes of this study, multimedia refers to interactive images and audio and video recordings found in NURS 242 on the Resources and Perspectives page each week, and in NURS 385 in the various Topic Toolboxes. It includes the interactive images that you click on to receive more information about a particular topic; the video perspectives (242 only); and the Nurse Consultant/Project Manager audio clips. I am defining authentic as holding relevance or real world applications for the students.

The purpose of the research is to determine the future use and type of multimedia in the RN-BSN online courses. I am also using this research as fulfillment of my doctoral degree as part of my dissertation at Indiana University in the Instructional Systems Technology department. This research will benefit the academic community because it will help us to understand the benefits and constraints of multimedia in our online programs. Prior to this interview and as a means of collecting more and different types of data, I collected pieces of text without any student identifiable information from student discussion board posts or assignments when those phrases have particularly mentioned use of multimedia in the course. In particular, I am looking to see if students cited and referenced the multimedia in their assignments. I have some ideas from looking strictly at these pieces of data how I think multimedia was used, but now I want to gain your insights.

Your participation will involve one interview that will last between 40 minutes to an hour. Please know that I will do everything I can to protect your privacy. There are minimal risks with this research project. Your identity or personal information will not be disclosed to anyone but me or in any publication that may result from the study. This interview will be recorded so I can generate accurate transcripts of our conversation. The mp4 of the interview will be kept on my hard drive in a secure location. I will be the only researcher with access to the recordings. You have a choice whether I record your audio only or video-tape us talking. I may review the video recordings to look at facial expressions and body language to reinforce any essential points that are made. That will be the only use of the videos. No images will be used from the videos. All recordings will be destroyed at the completion of the research.

Would you like me to record the audio only from this interview or would audio and video be ok?

During the interview you may skip questions or end at any time; you may also choose to change the method of interview from audio to video or vice versa. Do you have any questions before we get started?

I will begin recording now.

Instructor Script

This research is conducted specifically to garner your perception of the value and use of multimedia in NURS 242 and NURS 385. I am interested in what aspects of multimedia you perceive as useful or not to your students.

For purposes of this study, multimedia refers to interactive images and audio and video recordings found in NURS 242 on the Resources and Perspectives page each week, and in NURS 385 in the various Topic Toolboxes. It includes the interactive images that students click on to receive more information about a particular topic; the video perspectives (242 only); and the Nurse Consultant/Project Manager audio clips. I am defining authentic as holding relevance or real world applications for the students.

The purpose of the research is to determine the future use and type of multimedia in the RN-BSN online courses. I am also using this research as fulfillment of my doctoral degree as part of my dissertation at Indiana University in the Instructional Systems Technology department. This research will benefit the academic community because it helps us to understand the benefits and constraints of multimedia in our programs. Prior to this interview and as a means of collecting more and different types of data, I collected pieces of text without any student identifiable information from student discussion board posts or assignments when those phrases have particularly mentioned use of multimedia in the course. In particular, I am looking to see if students cited and referenced the multimedia in their assignments. I have some ideas from looking strictly at these pieces of data how I think multimedia was used, but now I want to gain your insights.

Your participation will involve one interview that will last between 40 minutes to an hour. Please know that I will do everything I can to protect your privacy. There are minimal risks with this research project. Your identity or personal information will not be disclosed in any publication that may result from the study. This interview will be recorded so I can generate accurate transcripts of our conversation. The mp4 of the interview will be kept on my hard drive in a secure location. I will be the only researcher with access to the recordings. You have a choice whether I record your audio only or video-tape us talking. I may review the video recordings to look at facial expressions and body language to reinforce any essential points that are made. That will be the only use of the videos. No images will be used from the videos. All recordings will be destroyed at the completion of the research.

Would you like me to record the audio only from this interview or would audio and video be ok?

During the interview you may skip questions or end at any time; you may also choose to change the method of interview from audio to video or vice versa. Do you have any questions before we get started?

I will begin recording now.

APPENDIX G

INTERVIEW PROTOCOL FOR STUDENTS AND INSTRUCTORS

Student Questions

[Show students the multimedia in NURS 242 Week 1 and NURS 385 Project 3 to refresh their memory.] What are the benefits of having the multimedia such as these in the courses? What are the drawbacks?

1. I am going to show you different types of multimedia in the courses. Rate the multimedia type I show you from 1-5, with 5 being most useful for your learning and 1 being not useful for your learning in NURS 242 & NURS 385? Why did you give it this rating? What would make the multimedia more useful?
2. What types of multimedia do you feel are most useful to your learning in NURS 242? Why? Least useful? Why? Most useful to your learning in NURS 385? Why? Least useful?
3. What aspects/attributes of the multimedia do you find to be most useful to your learning? Least useful?
4. Describe the importance of portability of the multimedia? Do you find this multimedia portable? Why or why not?
5. One instructor believes that the multimedia is difficult to find and locate so that is why students do not use it. What are your thoughts on this?
6. What is the value added of the multimedia verses reading the transcripts for your learning?
7. Is there multimedia that isn't in the course that you feel would be more useful than the multimedia that is in the course?
8. Now, I am going to give you two choices; tell me if you find one over the other more useful to your learning. If you see no difference in terms of the two items' use, just let me know. [Showing them the course media]
 - Watching the Jake perspective video or reading the transcript. Why?
 - Listening to Jake's audio or watching the video? Why?
 - Watching a nurse consultant or listening to the audio only of a nurse consultant? Why?
 - Seeing a video of real nurse's perspective in NURS 242 or watching Jake's who is an actor portraying a nurse?
 - Watching an illustration of a nurse consultant or watching a video of a real person? Why?
 - Interacting with an interactive media like the Topic 1: Metaparadigm of Nursing or reading a transcript with text only? Why?
 - Displaying all content at once like a transcript or having content hidden so you can get information as you need it like the Types of Knowledge interactivity?
 - Having drawn illustration on content like the Types of Knowledge interactivity, having no illustrations like the Nursing Theory interactivity? Why?
 - Do you feel there would be an added benefit of changing the drawn illustrations like on the Types of Knowledge interactivity to real world photos or life-like illustrations? Why or why not?
9. Tell me about a time you used multimedia in the course and in what context you used it?
10. I have observed students are referencing content and themes from the multimedia in their assignments, but generally do not cite multimedia as a source they used. Why do you think this is?

Examples: This is from the video of Marilyn; To be considered a profession a discipline must meet 6 criteria. Currently, there are only three occupations that do this: Medicine, Law, and the Clergy. The six criteria include: Altruism, a Code of Ethics, a professional organization, a unique base of knowledge, autonomy, and extensive education. Take a look at my support materials for a brief description on how nursing measures up to these criteria. However I will now take a minute and talk about one of them.

In this course I have realized that nursing has a problem because we do not articulate well what it is that we are. I always thought that nursing is a profession. In my nursing program we were taught that nursing is a unique occupation because it has evidenced-based practice. There are nurses that doing research on a PhD level. Nurses also have a professional organization (American Nurses Association). Sadly, I have realized in this course that nursing does not meet all 6 criteria to be called a profession. However, I have a hope that we all can change it, and officially be called a profession in a future.

11. At times it is difficult to tell from your assignments the value the multimedia is adding to your learning verses the readings. For example, this is an example individual reflection. How did the multimedia shape your learning verses the course readings when you created the team definition of nursing? Was it different when you built the project in NURS 385? After reading this week's materials, watching Jake's video, and researching online, I believe that the nursing as a profession would benefit from a better definition of nursing. Various definitions of nursing that are given, for example, by American Nurses Association, International Council of Nursing, and other sources, do not clearly and fully define what is nursing, and differences between definitions among various sources, does not help people to truly understand what is nursing. To be very honest, before this week's assignments and discussions, I have never really thought that there was a problem with defining nursing. In my previous nursing program, I used ANA's definition of nursing, and did not spend too much time researching this issue.
12. How would you define authenticity? What are the key attributes of authenticity?
13. How important is it that activities feel authentic? How important is it that multimedia feel authentic
14. Identify what you think is authentic about the multimedia in the course. What attributes

Instructor Questions

[Show instructors the multimedia in NURS 242 Week 1 and NURS 385 Project 3 to refresh their memory.]

1. What are the benefits of having the multimedia such as these in the courses? What are the drawbacks?
2. What evidence did you see in the courses that students used the multimedia?
3. I am going to show you different types of multimedia in the courses. Rate the multimedia type I show you from 1-5, with 5 being most useful for your students' learning and 1 being not useful for student learning in NURS 242 & NURS 385? Why did you give it this rating? What would make the multimedia more useful?
4. What types of multimedia do you feel are most useful to the students' learning in NURS 242? Why? Least useful? Why? Most useful to your learning in NURS 385? Why? Least useful?
5. Tell me about a time that a student referenced a specific multimedia or shared an idea that you think came from the multimedia from NURS 242 or 385 and in what context they referenced it in?
6. I have observed students are referencing content and themes from the multimedia in their assignments, but generally do not cite multimedia as a source they used. Why do you think this is?

Examples: This is from the video of Marilyn; To be considered a profession a discipline must meet 6 criteria. Currently, there are only three occupations that do this: Medicine, Law, and the Clergy. The six criteria include: Altruism, a Code of Ethics, a professional organization, a unique base of knowledge, autonomy, and extensive education. Take a look at my support materials for a brief description on how nursing measures up to these criteria. However I will now take a minute and talk about one of them.

In this course I have realized that nursing has a problem because we do not articulate well what it is that we are. I always thought that nursing is a profession. In my nursing program we were taught that nursing is a unique occupation because it has evidenced-based practice. There are nurses that doing research on a PhD level. Nurses also have a professional organization (American Nurses Association). Sadly, I have realized in this course that nursing does not meet all 6 criteria to be called a profession. However, I have a hope that we all can change it, and officially be called a profession in a future.

7. At times it is difficult to tell from the students' assignments the value the multimedia is adding to their learning verses the readings. For example, this is an example individual reflection. How do you think the multimedia shapes their learning verses the course readings when they created the team definition of nursing? It is different from when they built the project in NURS 385?

Example: After reading this week's materials, watching Jake's video, and researching online, I believe that the nursing as a profession would benefit from a better definition of nursing. Various definitions of nursing that are given, for example, by American Nurses Association, International Council of Nursing, and other sources, do not clearly and fully define what is nursing, and differences between definitions among various sources, does not help people to truly understand what is nursing. To be very honest, before this week's assignments and discussions, I have never really thought that there was a problem with defining nursing. In my previous nursing program, I used ANA's definition of nursing, and did not spend too much time researching this issue.

8. What aspects/attributes of the multimedia do you find to be most useful to your students' learning? Least useful?
9. Is there multimedia that isn't in the course that you feel would be more useful than the multimedia that is in the course?
10. Now, I am going to give you two choices; tell me if you find one over the other more useful to your students' learning. If you see no difference in terms of the two items' use, just let me know. [Showing them the course media]
 - o Watching the Jake perspective video or reading the transcript. Why?
 - o Listening to Jake's audio or watching the video? Why?
 - o Watching a nurse consultant or listening to the audio only of a nurse consultant? Why?
 - o Seeing a video of real nurse's perspective in NURS 242 or watching Jake's who is an actor portraying a nurse?
 - o Watching an illustration of a nurse consultant or watching a video of a real person? Why?

- Interacting with an interactive media like the Topic 1: Metaparadigm of Nursing or reading a transcript with text only? Why?
 - Displaying all content at once like a transcript or having content hidden so you can get information as you need it like the Types of Knowledge interactivity?
 - Having drawn illustration on content like the Types of Knowledge interactivity, having no illustrations like the Nursing Theory interactivity? Why?
 - Do you feel there would be an added benefit of changing the drawn illustrations like on the Types of Knowledge interactivity to real world photos or life-like illustrations? Why or why not?
11. How would you define authenticity? What are the key attributes of authenticity?
 12. How important is it that activities feel authentic? How important is it that multimedia feel authentic?
 13. Identify what you think is authentic about the multimedia in the course. What attributes could be added or eliminated to make it more authentic?

APPENDIX H
NURS 385 MULTIMEDIA ALIGNMENT

Alignment with sociocultural learning principles, learning objectives, readings, and learning activities.

Week	Location	Name	Type	Purpose	SS Theory	Learning Obj.
3	Topic 1 Toolbox	Community as Partner Image	Interactive overview	Illustrate how the projects in the course fit together	Assisted learning (cognitive task structuring)	Complete an Integrative Practice Experience
3	Topic 1 Toolbox	Natural History of Disease	Interactive multimedia	This image is meant to stress the timing, role and importance of primary prevention, secondary prevention, and tertiary prevention. Reading down the columns gives you the associations and timings.	Assisted learning - direct instruction of examples	Review levels of prevention as health-promoting tools.
3	Topic 1 Toolbox	Examples of health-promotion projects.	Project Manager Audio	Provides examples of projects from students in the past	Assisted learning - direct instruction of examples	Plan, implement, and evaluate a health-promotion intervention which addresses one of the identified diagnoses or a need of your identified CHN, or both.
3	Topic 1 Toolbox	How do we evaluate health-promotion projects?	Project Manager Audio	Highlights what should be measured after the implementation to see if the project is successful.	Assisted learning - direct instruction of examples	Plan, implement, and evaluate a health-promotion intervention which addresses one of the identified diagnoses or a need of

						your identified CHN, or both.
3	Topic 1 Toolbox	What's the difference between health promotion and disease prevention?	Project Manager Audio	Provides an example to differentiate the terms.	Assisted learning - direct instruction of examples	Define health promotion and disease prevention.
3	Topic 1 Toolbox	What's up with self care?	Project Manager Audio	Defines self care.	Assisted learning - direct instruction of examples	Review levels of prevention as health-promoting tools.
3	Topic 1 Toolbox	What is the purpose of shifting the emphasis from the individual to the aggregate?	Project Manager Audio	Explains that we want to shift the emphasis from the individual to the aggregate because individuals see their risk as low.	Scaffold, provide alternative perspective to have them question their current knowledge	Discuss ethical issues of particular importance to community health nursing.
3	Topic 2 Toolbox	What big ethical issues do community health nurses face?	Project Manager Audio	Explains Utilitarianism and Distributive justice and their relationship to ethical issues.	Assisted learning - direct instruction of examples	Discuss ethical issues of particular importance to community health nursing.
3	Topic 2 Toolbox	How do we do cultural assessment on an aggregate?	Project Manager Audio	Explains how to do a cultural assessment on an aggregate	Assisted learning - direct instruction of examples	Analyze the practice and importance of cultural assessments and their particular usefulness in community health care, particularly with immigrants.
3	Topic 2 Toolbox	What the heck is Healthy People 2010?	Project Manager Audio	Explains how the US department of health identify healthy goals for the US population. It is now called Health 2020	Assisted learning - direct instruction of examples	Identify government health care functions, the purpose of Healthy People 2010 (now 2020), and the community

						health nurse's role in policy development.
3	Topic 2 Toolbox	What is the nurse's role in the political process?	Project Manager Audio	Introduces students to new thinking for considering alternative roles for nurses	Scaffolding, pushing them to consider the opportunities	Identify government health care functions, the purpose of Healthy People 2010 (now 2020), and the community health nurse's role in policy development.
3	Topic 1 Toolbox	Community as Partner Image	interactive overview	Illustrate how the projects in the course fit together	Assisted learning (cognitive task structuring)	Complete an Integrative Practice Experience

APPENDIX I
NURS 242 MULTIMEDIA ALIGNMENT

Alignment with sociocultural learning principles, learning objectives, readings, and learning activities.

Week	Location	Name	Type	Purpose	SS Theory	Learning Obj.
1	Resources and Perspectives	Jake from the National Society for Nursing Advancement Board of Directors	Video Perspective	To set the challenge of why we have a problem with nursing today from the board of directors perspectives	Scaffolding (probe and question students)	Describe problems associated with a definition of nursing.
1	Resources and Perspectives	Topic 1: Metaparadigm of Nursing	Interactive Multimedia	Review the four concepts that are fundamental to nursing (person, health, environment, nursing)	Assisted Learning (direct instruction)	Define the four concepts of the Metaparadigm of Nursing: person, health, environment and nursing.
1	Resources and Perspectives	Topic 2: Definition of Nursing	Interactive Multimedia	Challenges students on the 1980 definition of nursing	Scaffolding (probe and question students)	Describe problems associated with a definition of nursing.
1	Resources and Perspectives	Topic 3: Types of Knowledge	Interactive Multimedia	Explores the type of knowledge that it is said that nurses have and use	Assisted Learning (direct instruction)	Describe the types of knowledge used by nurses: empirical, aesthetic, personal, and moral.
1	Resources and Perspectives	Topic 4: Nursing Theory	Interactive Multimedia	introduces the debate on whether theory helps the nursing profession	Assisted Learning (direct instruction)	Discuss the purpose, types, and usefulness of nursing theory.
1	Resources and Perspectives	Why do we need to define Nursing?	Online Nurse Consultant	Explores the rationale for a definition	Scaffolding (probing)	Describe problems associated with a definition of nursing.
1	Resources and Perspectives	What is the Metaparadigm of Nursing?	Online Nurse Consultant	Provides an alternative viewpoint on	Scaffolding (questioning)	Define the four concepts of the

				what the metaparadigm of nursing is		Metaparadigm of Nursing: person, health, environment and nursing.
1	Resources and Perspectives	Nursing: what is it not?	Online Nurse Consultant	Explores what nursing is not: Nursing is not Medicine. Nurses do not practice medicine. Nurses do not work in the medical field.	Scaffolding (elaborating)	Describe problems associated with a definition of nursing.
1	Resources and Perspectives	Do we need to know the ways of knowing?	Online Nurse Consultant	Explores the way the students formulate their understanding of the definition of nursing	Scaffolding (elaborating)	Describe problems associated with a definition of nursing.
1	Resources and Perspectives	So what good are nursing theories?	Online Nurse Consultant	provides a rationale to the importance of nursing theory	Scaffolding (questioning)	Discuss the purpose, types, and usefulness of nursing theory.
1	Resources and Perspectives	What is the IOM Report: Future of Nursing: Leading Change, Advancing Health?	audio only	Explains the possible impact of the IOM report	Assisted Learning (direct instruction)	Discuss the purpose, types, and usefulness of nursing theory.
1	Resources and Perspectives	Jake from the National Society for Nursing Advancement Board of Directors	Video Perspective	To set the challenge of why we have a problem with nursing today from the board of directors perspectives	Scaffolding (probe and question students)	Describe problems associated with a definition of nursing.

Gina Anderson

50849 Hawthorne Meadows Dr. • South Bend, In 46628 • Work: 574-807-8148 Ext (3) • Cell: 937-469-2925 •
gina@mopi16.com

Education

INDIANA UNIVERSITY, Bloomington, IN.

Doctor of Education in Instructional Systems Technology and minor in Learning Science (GPA: 4.0)

Dissertation: Multimedia use in an online RN-BSN program.

UNIVERSITY OF DAYTON, Dayton, OH.

Masters of Science in Education with Technology-Enhanced Learning Concentration, (GPA: 4.0)

Bachelors of Science in Special and Elementary Education (double major) with minor in Psychology, (GPA: 3.939)

Skills

- Leadership
- Administration
- Project Management
- Program Design and Planning
- Faculty Professional Development
- Research
- Instructional Design
- Course Development
- Instructional Technology
- Quality Assurance
- Quality Matters Peer Evaluator
- Usability Testing
- Online Teaching and Training
- Learning Management System Consultation
- Building Learning Communities
- Gamification

Professional Experience

Mopi16, South Bend, IN

Company which designs custom online trainings for companies.

Co-Founder/CEO, 07/12-present

- Landed contracts with national and regional companies within 6 months.
- Conceptualized and founded organization to provide customized elearning for companies grounded in best practices in online learning.
- Conceptualized the patent-pending visual environment and learning management system that is grounded in the research on reducing extraneous cognitive load with imagery to which each experience is hosted.
- Conceptualized eNugget® open and free “mini” professional developments for educators where they can customize their learning experiences.
- Built business model that company is founded on.

UNIVERSITY OF DAYTON, SCHOOL OF EDUCATION AND ALLIED PROFESSIONS, Dayton, OH

Top-tier Catholic University with education offerings from the undergraduate to the doctoral level.

Interim Director of Online Learning, 8/11-8/12; Sr. Instructional Technologist/Clinical Faculty, 6/02 to 7/11; and Graduate Assistant, 8/00 to 6/02

- Developed online programs which are ranked 12th in the country for student engagement by *U.S. News & World Top Online Education Program* rankings in 2012.
- Facilitated creative changes in educational programming, processes, and procedures.
- Communicated with key constituents university-wide to gain momentum and support of my vision of SOEAP online unit.

- Designed, developed and implemented a school-wide Massive Open Online Course for faculty development and got 100 faculty trained in a period of 3 months.
- Developed and implement online education activities-both strategic and operational based on best practices in online learning.
- Provided leadership in direction of school-wide policies and procedures for SOEAP online unit.
- Lead course and program development teams and filled the roles of instructional technologist, instructional design, web programming and IT support as needed.
- Worked with department chairs to coordinate priorities for course and program development with online program resources.
- Developed business plans and projections for proposed projects.
- Served as liaison to the Ohio Quality Matters Consortium.
- Managed online learning program staff and online program budget.
- Taught online and face-to-face and have a proven record of excellence evidenced by course evaluations and qualitative data where students have made life changes based on the learning experiences I designed.
- Build excellent working reputation with faculty, staff, administrators, and students as a knowledgeable, dedicated and responsive team member.
- Programmed online courses in the University of Dayton Learning Management Systems Web CT and Sakai.
- Published journal articles and presented at state and national conferences.

CONSULTING, Variety.

A variety of consulting opportunities in higher education, corporations, and K12 schools.

School of Continuing Studies, University of Illinois at Chicago; Illinois Online Network/U of I Online, 3/11-4/11; Northwestern, Department of Communication 10/08-8/10; University of Illinois at UIUC Academic Outreach, 1/09-1/10; University of Illinois Global Campus Project, 3/07-1/09; ASCD, 4/09-8/09; Donna Pepper Tech/Illinois State, 5/09-8-09; University of Illinois, Office of Business and Financial Services 7/06-9/08; and Indiana University Rec Plex 6/05-8/05

- Provide leadership in the direction of department structures and building online programs.
- Work with faculty using instructional design models to think in terms of best practices in online learning and teaching rather than simply converting the existing in-classroom materials.
- Present course design options and examples to faculty to enhance the quality and impact of the course.
- Assist and give recommendations to administration in regards overall online program planning, hiring of consulting companies, and purchasing of software packages.
- Work closely with Subject Matter Experts (SME) through the entire design process to create online courses anchored on best-practices in teaching and learning.
- Program course content and web sites using HTML and cascading style sheets (CSS).
- Manage course design and development timelines to ensure that course content is drafted, edited, uploaded, reviewed, and tested on time.
- Conduct testing to ensure that course meets Quality Matters rubric and accessibility standards.
- Work cooperatively with vendors to develop graphics and interactive multimedia for courses.
- Design Instructional Design templates to assist in the course design process.
- Program course content in the Learning Management System, Sakai, Desire2Learn, Blackboard, Moodle, Lectora, Rapid Intake, and WebCT.
- Facilitated online course to group of administrators and teachers.
- Manage multiple projects during the same period.
- Designed, co-authored and published *Becoming a Star Teacher*, an online mentoring class for entry year teachers.

THE UNIVERSITY OF ILLINOIS, ELECTRONIC RESEARCH ADMINISTRATION, Champaign, IL.
University-wide appointment.

Instructional Specialist, 8/06-5/07

- Established and implemented a blended-learning training strategy to support University-wide training on all University of Illinois campuses.
- Analyzed options, developed business case, and recommended Learning Management Systems (LMS) for implementation of University-wide training strategy.
- Design, develop, and maintain innovative interactive role-based eLearning courses to differentiate for security in the UI eRA system.
- Design, develop, and maintain LMS and interactive materials which incorporate streaming videos, animation, simulations, job aids, and manuals.
- Manage multiple tasks including but not limited to, providing daily system technical support and backup support to System Administrator, conducting quality assurance testing for the UI eRA system, and managing all aspects related to training for the project.

INDIANA UNIVERSITY, SCHOOL OF EDUCATION., Bloomington, In
Ph.D. coursework in Instructional Systems Technology.

Chancellor's Fellowship Researcher, 8/04-8/05

- Studied and conducted research in the Instructional Design of online environments under top IST faculty in the country.
- Assisted with development of online streaming video cases and research agenda on training and supporting PK-12 teachers in historical problem-based inquiry online environment.
- Managed, organized, and ran IST professional conference and presented at national conferences.

FINNEYTOWN MIDDLE SCHOOL, Cincinnati, Oh
Inner city middle school.

Intervention Specialist, 8/98-6/00

- Taught 7th Grade Language Arts, self-contained math and a resource room, and assisted in a 7th and 8th Grade Language Arts classroom in an urban setting.
- Wrote grant collaboratively for the special education program.
- Coached a variety of sports; high school boys' and girls' tennis, middle school girls' volleyball, middle school boys and girls track and field.
- Recognized as top special education team member and received the outstanding special education team member award.

Publications and Conferences

Journal Articles

- Anderson, G. L. (in press). *Multimedia use in an RN-BSN program*. (Doctoral dissertation).
- Anderson, G. L., Tredway, C. & Calice, C. (2015). A longitudinal study of nursing students' perceptions of online course quality. *Journal of Interactive Learning Research*, 26(1), 5-21.
- Anderson, G. L. & Tredway, C. (2009). Transforming nursing curriculum to promote critical thinking online. *Journal of Nursing Education*, 48(2), 111-115.
- Richards, S., & Dysard, G. L. (2006). A framework for professional goal development in technology use. *Ohio Journal of Teacher Education*, 19(1).
- Rowley, J., Dysard, G. L & Arnold, J. (2005). Developing a new technology infusion program for preparing tomorrow's teachers. *Journal of Technology and Teacher Education*, 13(1), 105-123.

- Richards, S., & Dysard, G. L. (2003). Teaching in a blended face-to-face and online environment: perspectives and recommendations. *Ohio Journal of Teacher Education*, 16(2).

Refereed Conference Presentations

- Dysard, G. (2005, March). Motivational factors impacting teacher participation in an online professional development community. Research paper presented at the Society for Information Technology & Teacher Education. Phoenix, Arizona.
- Rowley, J. & Dysard, G. (2004, February). Preparing tomorrow's teachers to use technology with PBS TeacherLine. Research paper presented at the annual meeting of the American Association of Colleges for Teacher Education. Chicago, IL.
- Dysard, G. & Oberlander, J. (2003, July). Integrating problem-based learning in K-12 classrooms. Research paper presented at National Education Computing Conference. Seattle, Washington.